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An Address

ENTITLED

WHY IS TUBERCULOSIS SO COMMON IN IRELAND?

WITH SUGGESTIONS FOR ITS PREVENTION AND TREATMENT.

Delivered in Lurgan on Dec. 18th, 1907, in connexion with the Tuberculosis Exhibition,

BY SIR JOHN BYERS, M.A., M.D. (R.U.I.),

PROFESSOR OF MIDWIFERY AND DISEASES OF WOMEN AND CHILDREN, QUEEN'S COLLEGE, BELFAST.

APPALLING STATE OF IRELAND WITH REGARD TO TUBERCULOSIS

MR. CHAIRMAN, LADIES AND GENTLEMEN,—That tuberculosis (that is, consumption in its various forms)—and the Tuberculosis Exhibition here demonstrates that almost every part of the body may be affected—is far too prevalent in Ireland is evident from the following facts, most of which are shown in the statistical charts on the walls of this room. 1 In the records of the various countries of the world Ireland stands fourth highest in its mortality from pulmonary tuberculosis, being only exceeded by Hungary, Austria, and Servia. 2. Comparing England, Scotland, and Ireland, it appears that while in 1864 Ireland stood lowest of the three, with a rate of 2·4 per 1000 living, the rate for England being 3·3 and that for Scotland 3·6, in 1905 and in 1906 Ireland was highest with a rate of 2·7, Scotland next with 2·1, and England lowest with a rate of 1·6. In 1879 the death-rate in England and Ireland from tuberculosis was about the same, and in 1885–86 it was the same in Scotland and Ireland. In Ireland in 1906 no less than 11,756, or 15·8 per cent., of the total deaths were due to tuberculosis—that is, more people died from this cause alone than from cancer and all the principal epidemic diseases (influenza, whooping-cough, typhoid fever, measles, diphtheria, and diarrhœa) added together. Further, the majority dying were in the prime of life (between 15 and 45 years of age) and for every death from tuberculosis there were at least ten persons suffering from various forms of that disease, many of whom have their wage-earning power diminished or altogether taken away. It is a terrible feature of the white plague in Ireland that the mortality is greatest in those ages which ought to form the very backbone of our people. 3. Further, since 1873 in England and Wales, and since 1870 in Scotland, the mortality from what is ordinarily called consumption—pulmonary phthisis—has been reduced by one-half among females and one-third among males, yet there is no such fall in Ireland. In 1906, again, more women than men died in Ireland from pulmonary or tuberculous phthisis.

The above facts show that the condition of Ireland as regards tuberculosis is simply appalling and demands the most careful consideration.

TUBERCULOSIS AN INFECTIOUS DISEASE.

As you are aware, tuberculosis is now regarded as an infectious disease, the immediate cause being the bacillus or rod-shaped vegetable organism discovered in 1882 by Koch, so microscopic in size that it has been computed that four hundred millions could be ranged close together on the surface of a penny postage-stamp. There are two avenues by which the cause of the disease enter the body—first, by inhalation of the germs directly by close contact with a person suffering from pulmonary phthisis (being disseminated in the act of coughing, shouting, &c., in the form of minute moist particles of spray), or indirectly, through dust containing the dread bacillus given off in the expectoration of a careless person ill of the disease; and secondly, by the ingestion of tuberculous meat and milk, but there can be no question that of the two (meat and milk) the latter (milk) is much the more important, because while meat is taken cooked (which destroys the bacilli) in small quantities by adults whose power of resistance, or immunity as it is scientifically termed, is increased, milk is taken in large quantities in a raw condition—often as their sole food—by children, with relatively diminished powers of resistance. The bacilli may also find an entrance by skin wounds, or they may be carried in with air in mouth inspiration, or by dirty objects placed in the mouth by children. When the bacilli reach a favourable place or nidus they multiply rapidly and by their presence and irritation they excite the surrounding tissues to increased growth which results in the formation of nodules called "tubercles." These in turn usually soften, and if in a lung are coughed up as the expectoration, if in a limb they form a discharge (abscess).

There are two factors in the causation of tuberculosis; first the bacilli, and secondly the predisposition or susceptibility of the individual; and certain conditions, to be mentioned later, might increase or diminish the infectivity of the bacilli, while on the other hand certain factors heighten or lessen the susceptibility of the individual. We are now in a position to attempt to answer the question, "Why is tuberculosis so common in Ireland?" I propose to-night to discuss some of the reasons that have been usually assigned.

CAUSES ASSIGNED FOR THE PREVALENCE OF TUBERCULOSIS IN IRELAND.

1. *The damp climate.*—We have been told that the prevalence of tuberculosis in Ireland is due to its damp atmosphere, the general humidity causing chest affections which tend to form a nidus for the tubercle bacillus. At the opening of the Tuberculosis Exhibition in Dublin Professor William Osler, in alluding to this view, denied it altogether, and pointed out Cornwall with a much damper atmosphere than in Ireland as being a place so free from the disease that consumptives were sent there. In comparing different towns I was much struck with the fact that while in Belfast the death-rate from phthisis was in 1906 2·77 per 1000, with a rainfall of 34·57 inches, in Glasgow with its humid atmosphere and higher rainfall (35·80 inches) the phthisis death-rate was only 1·5 per 1000. In Bolton with a moist climate and a rainfall of 42·43 inches the death-rate from phthisis has fallen to 1·11 per 1000 for 1906. In Cardiff (with a damp climate and with the ground water in many places near the surface in the gravel and with the lower part of the town near the docks, moors, &c., on a stiff marine clay, very retentive of moisture) the death-rate for 1906, with a big rainfall of 42·81 inches in this town (very much recovered from the sea as Belfast was) instead of being, as in Belfast, with a smaller rainfall of 34·57 inches, 2·77 per 1000, was only 1·20; and it has steadily fallen. In Manchester the climate is both damp and foggy, and the deprivation of light is greater than in any other English city (in spite of strenuous efforts to deal with smoky chimneys); yet, notwithstanding this, the phthisis death-rate has fallen to 1·82 in 1906. In Liverpool, a damp city, it is 1·82, and in London, with its fogs at times, the phthisis death-rate in 1906 was only 1·42. Again, if we go to Dublin, with a rainfall less than in Belfast (27·73 as compared with 34·57 inches in Belfast), the death-rate from consumption was 2·91 (that is, higher than in Belfast) for 1906. I cannot, therefore, admit that there is much in the dampness of the atmosphere as a cause of tuberculosis in Ireland.

2. *Dampness of the soil.*—The dampness of the soil has also been assigned as a cause. Now, it used to be thought that after places were thoroughly drained the phthisis-rate fell, and the experience of Salisbury and Ely were formerly quoted in support of this view; but it was forgotten that in another town, Chichester, that was not drained at all, the phthisis death-rate fell, probably owing to the larger proportion of phthisical patients who died in the workhouse in that town, while in Belfast the main drainage scheme has had no effect in diminishing the phthisis death-rate. Whilst subsoil may be of some importance it is now recognised that other conditions are of much more potency in the problem of the causation of phthisis. It is a curious fact, as shown in the annual report of the Registrar-General for Ireland in 1904, that in reference to the seasonal mortality from tuberculosis the greatest number of deaths were registered in the June quarter.

3. *Emigration as a cause of tuberculosis.*—It is held by some that the long tide of emigration from Ireland has left behind a physically inferior population—a race of weaklings who propagate weaklings—all very susceptible to phthisis. I am aware that many hold this view, but there are serious scientific objections to it. First, Why is it that in a comparatively new town like Belfast, which—from its industries supplying employment—attracts the robust and strong from

the surrounding counties, the death-rate from tuberculosis is so high? Secondly, the census returns for the last three decades indicate an extraordinary influx of lives into Belfast between the ages of 15 and 35 years (females showing an abnormally high proportion). These are good lives, and yet we have a high consumption rate. Thirdly, notwithstanding the fact that emigration has produced a curious age distribution of population in Ireland (persons aged 60 years and upwards are equal to 14·2 per cent. of the total population of Ireland, as compared with 10·4 per cent. of the total population of England and as compared with 10·9 of the total population of Scotland) it is a remarkable fact that the birth-rate, corrected for the number of women at child-bearing ages and for the number of married women, has actually increased in Ireland, while it has decreased in England and Scotland, a fact which indicates that fertility and vitality have not decreased in Ireland. Fourthly, if the cause of the high tuberculosis death-rate in Ireland be the physical decadence of the people in Ireland, what about the condition of those who leave our shores for America? Well, it is stated that in the United States (and figures have been given) the phthisis death-rate for the Irish is higher than for other nationalities. According to this view, if the occurrence of tuberculosis be taken as a test of a physically inferior people those who emigrate are no better than those who remain behind. Fifthly, Belfast is in that part of Ireland which has probably suffered least from emigration and where prosperity is, from a commercial point of view, the greatest, and yet its death-rate from tuberculosis is very high. Sixthly, in a recent examination of recruits the smallest number of rejections were among the Irish. Seventhly, as pointed out by Dr. A. Newsholme, in the past it was the small farmers, the cottiers, and the labourers who emigrated in the largest numbers and these, owing to their extreme poverty, must have been among the least fit, while on the other hand those remaining are the offspring of people more favourably situated and who have been living under progressively better conditions than their predecessors in the past and who accordingly should be more vigorous.

4. *The susceptibility of Irish people to tuberculosis.*—It has been stated that there was in the Irish (some said the Celtic, including the Scotch Highlander) race a soil upon which the tubercle bacillus grew with extraordinary facility, and American statistics have been quoted to support this view, and it has also been laid down that Ireland by that reason was severely handicapped in the race with other countries to stamp out tuberculosis. I deny altogether that Irishmen, as a race, are specially prone to consumption. Why was it that according to the Registrar-General's return Ireland in 1864, when there were far more Celts in the country, had a lower death-rate from tuberculosis than either England or Scotland? Again, it was curious that of the smaller urban towns in Ireland the one with the highest phthisis death-rate was Newtownards, situated in the most Scottish county in Ireland, Down, where, at the time of the Ulster plantation, the people came not from the Highlands, the home of the Scotch Celts, but from the Lowlands. The people of Ireland are unfortunately suffering from tuberculosis not because they are Irish or Celts but because, as I shall show later, through want of education, they have not been taught in the past how to grapple with the white plague, and our emigrants in America suffer largely for the same reason, and also because they keep so much together and are influenced by their environment (that is, the conditions under which they live). Further, I do not accept the view that a high consumption death-rate is a sign of physical inferiority any more than I do that the existence of typhus fever in Ireland in the past was to be regarded in the same way. In both cases their prevalence was, and is, due to want of care being taken to stamp them out.

5. *Poverty and social position as a cause of tuberculosis.*—The fact that comparing the mortality in the four classes the rate was, from tuberculosis, 0·63 in the professional or independent class, 2·79 in the middle class, 3·54 amongst the artisan and petty shopkeepers, and 4·12 in the general service class, shows that amongst those better housed, clothed, and fed the mortality is much less than among those who have not the same advantages as regards these factors, and whose occupation is more exposed, severe, and laborious. But this explanation, it must be admitted, applies to almost every disease (infectious or not) as well as to tuberculosis. Yet, on the other hand, we must not forget that Ireland has during the past quarter of a century shared with England in increased cheapness of food and of living; wages have increased, and the savings bank returns show that while in 1870 the lodgments were £2,700,000 they had increased to £6,970,000 in 1894.

6. *Food and drink.*—There is ground for believing that the increased use of tea and white household bread instead of the old porridge and buttermilk and the excessive use of alcohol have lowered the resistance of the people to the tubercle bacillus. The food which is of greatest importance in reference to tuberculosis is milk, because it is now practically agreed that the bacillus of tuberculosis is the same in the cow and in man and that the disease is intercommunicable, and in the second interim report of the Royal Commission appointed to inquire into the relation of human and animal tuberculosis, Part I., Report, 1907, pp. 36 and 37, the Commissioners in their conclusion make the following weighty deliverance:—

> A very considerable amount of disease and loss of life, especially among the young, must be attributed to the consumption of cow's milk containing tubercle bacilli. The presence of tubercle bacilli in cow's milk can be detected, though with some difficulty, if proper means be adopted, and such milk ought never to be used as food. There is far less difficulty in recognising clinically that a cow is distinctly suffering from tuberculosis, in which case she may be yielding tuberculous milk. The milk coming from such a cow ought not to form part of human food and ought not to be used as food at all.
>
> Our results clearly point to the necessity of measures more stringent than those at present enforced being taken to prevent the sale or the consumption of such milk.

I am in a position to say, from a communication which I have received from one of these Royal Commissioners, that "the German commission has ultimately come to much the same conclusion as we have, and the Americans have fallen into line." In Ireland it has been estimated that probably at least 30 per cent. of the milch cows are afflicted with tuberculosis. Now, in the children's hospitals in Belfast—and the same is true of similar institutions in England and Scotland—about from 20 to 30 per cent. of all the children treated suffer from various forms of tuberculosis (bones, joints, glands, abdominal and cerebral types). As a rule these hospitals do not admit children over 12 years of age and it is curious that the pulmonary forms of tuberculosis are rare, showing that the disease is not in them so often acquired by inhalation as in adults—while, on the other hand, the ravages of the disease in children who require surgical treatment far outnumber what are called the medical forms of tuberculosis. One is driven to the conclusion that the disease is acquired in children largely by ingestion through swallowing tuberculous milk.

7. *Industries.*—According to some it is the influence of industries—especially in towns—which causes the high tuberculosis death-rate. Now, it is curious that in Dublin they have little or no textile industries as in Belfast, and yet the Dublin phthisis death-rate is the higher of the two cities. Then in Bolton, Manchester, Oldham, and other towns where there are cotton and other industries the death-rate from phthisis has fallen, while it has not done so in Ireland. Further, in Great Britain, much of the reduction of phthisis had occurred before systematic action had been well begun for the suppression of dust in factories. Year by year the conditions in the mills regarded as inimical to health—dust, damp, high temperature, and imperfect ventilation—have improved, and in 1904 Commander H. P. Smyth, in his report upon flax mills, says: "I cannot speak too highly of the efforts that have been made by many [manufacturers]. They have spent time, thought, and large sums of money, going far beyond any legal requirements that have yet been made." I am firmly convinced that the influence of industries—especially the textile ones—as a contributory cause of tuberculosis in Ireland has been overstated. Legally, the owners of mills are obliged to reduce as much as possible anything in their works inimical to health and taking Belfast, the great industrial centre of Ireland, as an example, supposing the death-rate was proved to be higher among the workers in mills and in factories in that city than among the rest of the population, still that excess would raise the total death-rate only by a twelfth part, because at the present time the numbers of these workers are about 25,000 females and 5000 males; therefore, if the mill and factory death-rate were 23 per 1000, whilst the total death-rate was 20, to eliminate the 30,000 mill-workers would make the death-rate 19·75, instead of 20 per 1000.

8. *Want of sanitary reform in Ireland.*—There can be no question that in the past we have not made the same progress as has been done in England and Scotland in the sanitary measures taken to improve the dwellings of the people all over the country, and in both England and

Scotland, from about 1860 to 1882, when Koch discovered the bacillus of tuberculosis, owing to sanitary reform, coupled especially with the segregation of advanced cases, the disease had decreased even before the discovery of its immediate cause. Tuberculosis has been well called a dwelling or house disease, and, as pointed out by Koch, a person suffering from the disease became dangerous only when he was personally uncleanly, that is, did not disinfect his sputa, or became so helpless in consequence of the far-advanced state of the disease that he was no longer able to see to the suitable removal of the sputa, and, finally, that for the healthy the dangers of infection increased with the impossibility of avoiding the immediate neighbourhood of a dangerous patient—for instance, in densely inhabited rooms—and especially if these rooms were overcrowded and if they were badly ventilated and inadequately lighted. Let me give some interesting experiments on this question. If you take virulent sputum (expectoration) from a consumptive patient and deposit it on the window-ledge of a house that is insanitary—that is, badly ventilated—perhaps built directly on the clay and not cut off properly from the ground air and water—it will retain its power for months; nay, more, the ordinary processes of disinfection will not destroy the infective activity of such tuberculous material, indeed, it will survive freezing and thawing. On the other hand, when similar virulent expectoration is exposed in houses which have light and air with but little radiant sunshine for even two days its power for evil is gone. With light and ventilation it does not reach its dangerous state of dust before it is deprived of all power of doing harm, long-lived though the bacilli may be under certain insanitary conditions. Now sanitary reform of the houses does something else in addition to lessening the infectivity of the bacilli: it increases the resistance of the human body to their inroads. Those who have thoroughly investigated the question tell us how often cases of pulmonary consumption in our towns recur in certain houses and streets, how frequently one or more persons share the room or even the bed of a consumptive, how commonly the consumptive changes his house thus multiplying infection, and how rarely the house of a consumptive is disinfected either during his illness or after his death. I am bound to admit that the housing of the people in Ireland has improved, but in neither town nor country districts is it at all equal to what it is in England, and therefore want of sanitary progress in Ireland must, I think, be accepted as a cause for the prevalence of tuberculosis.

9. *The domestic or home treatment of the advanced cases of pulmonary tuberculosis.*—We now come to what I regard as the most potent cause which has prevented a lowering of the tuberculosis death-rate in Ireland and that is the domestic or home treatment of advanced cases of phthisis, because increasing experience demonstrates that with isolation of these advanced or "open" cases in any country the death-rate falls. Here are a few examples: In Stockholm, a city with a population of 300,000 (that is less than Belfast), over 400 cases of pulmonary tuberculosis are cared for in the hospitals of the city, with the result that in the last decades the death-rate from phthisis has gone down 38 per cent. As Koch puts it, we are to derive from this the lesson that the greatest stress is to be laid on this measure—namely, the placing of cases of pulmonary phthisis in suitable establishments—and far more care should be taken than hitherto that such patients do not die in their dwellings where they are for the most part in a helpless situation and inadequately nursed. In Prussia from 1876 to 1886 the pulmonary phthisis rate stood very high; since that time it has fallen from year to year and the decrease is now more than 30 per cent., that is about one-third; indeed, it has been calculated that though the population has meanwhile increased the number of people who die every year from pulmonary phthisis in Prussia is now about 20,000 less than it was 20 years ago, and Koch says that he is firmly convinced that the better provision for patients in the last stage of pulmonary phthisis—namely, the lodging of them in hospitals which is done in England as well as in Prussia to a comparatively large extent—has contributed most to the improvement. The very opposite line of practice—that is, the want of institutional treatment—is the cause why in Austria and Hungary the pulmonary phthisis death-rate still continues as formerly so high. In Berlin the death-rate from pulmonary consumption has decreased *pari passu* with the circumstance that during recent years more than 40 per cent. of the cases of pulmonary phthisis die in hospitals. A disease which comes near to tuberculosis in many respects is leprosy. In Norway, by isolating the most dangerous cases, the number of lepers has fallen from 3000 in 1856 to 500 at the end of 1905, and Koch, pointing to this as an example, emphatically declares that advanced cases of phthisis, those which are admittedly the most dangerous, ought to be lodged in hospitals. No man has devoted greater attention to this question than Dr. Newsholme, medical officer of health of Brighton, president of the Epidemiological Section of the Royal Society of Medicine, and one of the greatest living authorities in matters of public health. He made a most elaborate inquiry into the principal causes of the reduction of the death-rate from phthisis in different countries and came to the conclusion that the one common factor present in all places where the death-rate from this disease fell was the segregation of the patients in general institutions—that is, infirmaries or hospitals. In each country in which the institutional has replaced the domestic relief of destitution there has been a reduction of the death-rate from phthisis which is roughly proportionate to the change. Here are his interesting observations as to the increase of consumption in Ireland contemporaneously with its diminution in England. In the United Kingdom, he says, paupers receive two kinds of medical relief, outdoor or domestic and indoor or institutional (that is, workhouse or workhouse infirmaries). In England during 1861–65 the total number of paupers per 100,000 of the population was 4824, of whom 694 were in receipt of indoor relief and 4130 of outdoor relief. In 1901–03 the number of paupers per 100,000 of the population had diminished to 2218, and of these those receiving indoor relief were 688 (almost the same as 1861–65), while those in the receipt of outdoor relief were now only 1530. In Scotland there were during 1868–70, 3896 paupers per 100,000 of the population, of whom 253 got indoor and 3643 outdoor relief, while in 1901–03 the total number of paupers per 100,000 of population had sunk to 1922, of whom 242 (almost the same as in 1868–70) got indoor and only 1680 outdoor relief. In Ireland, on the other hand, during 1861–65 there were 1036 paupers per 100,000 of population, of whom 928 received indoor and 106 outdoor relief, while in 1901–03 the total number of paupers per 100,000 of the population had actually increased to 2272, and while those who got indoor relief were 947 (almost the same as in 1861–65), those receiving outdoor relief had increased to 1325. These figures, Dr. Newsholme thinks, and I am in entire agreement with him, give the key to the difference between Ireland and Great Britain. It is the enormous increase in the former country of pauperism relieved medically at home by the dispensary system which favours the treatment of even advanced cases of phthisis at home. Hence, Dr. Newsholme said, crowded and insanitary homes had their natural effect—when infectious patients have not been removed from them—of increasing the consumption death-rate. The fact that in Ireland the death-rate from consumption is higher among women than among men supports this view as it indicates domestic rather than industrial infection. The women (wives, sisters, and daughters) nursing the sick at home become infected. Further, it has been noted that consumptives do not remain nearly so long in the Irish workhouses as they do in the English, and even in Belfast where the most admirable arrangements were made in the union infirmary to treat consumptive patients in wards by themselves there is a common custom for the advanced (and most dangerous) cases to go home near the end to die. The same practice occurs, though I am glad to say to a less degree, with patients in the admirable sanatorium of the Belfast Union at Whiteabbey where in the verandahs in the present weather patients are sleeping. It has also been noticed that Irish Americans, who contract the disease when they emigrate, often come home to die, a practice which of course tends to spread the disease among the poor in Ireland; and those living in country districts know how often the people who have acquired the disease in Irish towns come in the end—often in the hope of recovery in their native air—to their old homes in the country to die.

It is interesting to note that there was no Poor-law provision in Ireland until 1838, and the Act passed then for the more effective relief of the destitute poor in Ireland, unlike the English Act, entirely prohibited outdoor relief. Before the end of 1840 127 unions were formed, each with its own workhouses, and the total 130 arranged for in the Act were soon afterwards established and relief could not be obtained except in these institutions. During the great famine

(1845–48) the restrictions as to the giving of outdoor relief were for the time relaxed, and after the famine the rigid rules as to outdoor relief were reimposed, but, notwithstanding, outdoor medical relief gradually became more general, and from 1880 onwards the general policy of the Poor-law authorities was completely inverted, until in the year 1903–04 it is really astounding to record that the proportion of new cases of sickness attended, either at dispensaries or in their own homes, formed nearly one-eighth of the total population of Ireland. When I speak of outdoor relief in Ireland I mean, of course, medical relief given in the forms of medical attendance, advice, and medicine, either at the dispensaries or at the homes of the patients, and if we have to lament that pauperism in this sense has not declined in Ireland, it is clear that it is due to statistical and administrative causes. In Great Britain, as pointed out by Dr. Newsholme, the regulation has been generally enforced that in order that a sick or disabled husband among the poor may receive relief to which his destitution entitles him he must enter the infirmary. A sick wife, however, is not entitled to parochial relief so long as her husband is in receipt of wages sufficient to support her. This is the reason why a much larger proportion of male than of female consumptives are treated in England in workhouse infirmaries.

In an extremely interesting recent paper by Dr. Newsholme, to which as well as to his other thoughtful writings I gladly acknowledge much indebtedness, he points out the remarkable fact that while typhus fever has diminished in Ireland, phthisis has contemporaneously increased, and asks this question, "Now, if improvement in general well-being of the population associated with better nutrition, diminished overcrowding, and improved houses has, as is commonly stated, been the main determining cause of the diminished mortality from typhus and phthisis in England and in Scotland, how has the equally striking diminution of typhus in Ireland been brought about and why has it not only been accompanied by any diminution in the death-rate from phthisis but by an actual increase in the death-rate from this disease?" It is plain that the reduction of typhus fever and the increase of phthisis in Ireland have both of them been associated with Poor-law administration. As Dr. Newsholme puts it, at first outdoor or domestic relief under the Irish Poor-law was very restricted, but in the process of time the Poor-law policy of Ireland was changed, medical and other forms of relief being freely given to people still living at home. During the last 25 years outdoor medical relief had been more largely given than indoor relief, especially when allowance is made for the fact that indoor relief includes the provision of a large portion of the general hospital accommodation of Ireland. Associated with this changing administration was the fact that residential conditions of relief were imposed, which tended to prevent the great vagrancy and mendicancy which had prevailed so much in Ireland. What would be the effect on typhus fever and phthisis of (1) the increasing immobilisation of the population in their own districts, and of (2) the increase in the proportion of sickness in the aggregate, and especially of phthisis, treated in the homes of the people? The readiness with which medical treatment, both at home and at the dispensary, could be obtained led to the greater portion of the lives of consumptive patients being spent at home. For typhus fever it was otherwise. Here was a disease which, unlike phthisis, was not infectious for several years but only for two or three weeks and which disabled immediately instead of after protracted ill-health. The objections of the people to the union hospital were easily overcome for this disease, but only rarely in the case of phthisis. Hence, Dr. Newsholme shows, the same measures which were successful for typhus fever led to an actual increase of phthisis. Typhus fever has been brought to the point of extinction by its institutional treatment, acting in conjunction with the removal of the motives for vagrancy. Phthisis has been rendered even more prevalent than formerly by increasing for this disease domestic at the expense of institutional treatment, and by thus continuing the enormous number of domestic foci of this disease which are implied by the home medical treatment of phthisis among the poor.

10. *Popular ignorance of the nature of tuberculosis.*—Lastly, want of knowledge on the part of the public of the nature of the disease, of the measures needed for its prevention, and of the precautions required to limit its spread is a factor of importance as explaining the great prevalence of tuberculosis in Ireland. Want of knowledge brings carelessness, indifference, and in the end even apathy.

Having tried, therefore, to show why tuberculosis is still so prevalent in Ireland, and remembering that it is an infectious disease due to a bacillus which may enter the body either through the pulmonary system by being inhaled, or by the alimentary tract by being swallowed, and occasionally through a skin wound, what steps should be taken to combat the disease in Ireland?

PRACTICAL SUGGESTIONS FOR THE PREVENTION AND TREATMENT OF TUBERCULOSIS IN IRELAND.

1. The starting point for dealing with all infectious diseases or pestilences is notification, and in my opinion this must be made compulsory in the case of tuberculosis all over the country. In no other way can we know where the disease exists or what stage it is in, and unless both these facts are ascertained how can any attempt be made to deal with it from a public health point of view? Nothing seems more incongruous than the prompt care that is properly taken to cut short an outbreak of small-pox, typhus fever, or spotted fever in Ireland, and the utter apathy displayed in dealing with an infectious disease like tuberculosis, whose victims are so immensely more numerous than those of all the other infectious maladies combined. Compulsory notification is the first and most essential step in the anti-tuberculosis campaign.

2. When by notification we know where the disease is, our next duty is to pursue in Ireland, as is being done in every country where the death-rate from tuberculosis has fallen, the institutional treatment of pulmonary phthisis, especially of those advanced cases which are so ill as to be unable to look after themselves, and who in the interest of the healthy members of the household, must be removed, just as cases of typhus fever are in Ireland and as advanced cases of leprosy are isolated in Norway. Separate wards could be arranged for these advanced "open" cases, which are more dangerous the nearer they come to the end, in the union hospitals, where they would be so much better attended and nursed than at home. As we know that pulmonary consumption is mainly spread by infection from a tuberculous patient, the placing of such a person in a hospital or an infirmary releases his household from its principal exposure to infection, but further by reducing anxiety and worry it indirectly improves the health of the family. In Ireland, if we are to stamp out the disease, the institutional (that is by hospital or infirmary) treatment of advanced cases of pulmonary consumption must be done on a scale not hitherto thought of, and such treatment must be made attractive. If it is absolutely necessary, then there should be fresh legislation declaring tuberculosis an infectious disease; but even without waiting for this the Irish Local Government Board might follow the example of the Local Government Board of Scotland which took the bold and independent course on March 10th, 1906, of issuing a circular (Public Health, No. 1, 1906) in which it was laid down that tuberculosis of the lungs or consumption was an infectious disease within the meaning of the Public Health Act, and that the sections of the Public Health Act applicable to other infectious diseases are equally applicable to pulmonary phthisis, and the obligation resting on the local authority to deal with and control infectious disease was made to extend to pulmonary phthisis.

The provisions of the Public Health Act as to removal of cases of infectious disease to hospital and as to the provision of hospitals are available for dealing with cases of pulmonary phthisis as with cases of other infectious diseases. These provisions, the circular points out, can be adapted in practice to any type of case—incipient cases, where the danger of infection to others, though for the time at a minimum, may suddenly become serious; intermediate cases, where the patients, still able to work, may, if uncontrolled, become dangerous; and advanced cases, where the patients, frequently unable to attend to themselves, may be a source of grave danger. With reference to the advanced cases, "the isolation of such dangerous cases," says this circular of the Scottish Local Government Board, "is a primary duty of the local authority." When a case of typhus fever, small-pox, or scarlet fever is sent into a union fever or other hospital in Ireland such a case must not be removed (being dangerous infectious diseases) whilst so suffering under a penalty of £5, and any person in charge of the case which is thus removed is liable to a similar fine of £5, yet at present an advanced case of pulmonary tuberculosis, the most dangerous of all forms of tuberculosis, and admittedly most infectious, can, if in a union or other hospital, be removed at any time, and can be taken home to spread disease by infection among the family.

For the very early cases, in the hope of arresting the disease, sanatoriums should be erected, and one might suffice for two or three counties. These sanatoriums should be made of some cheap material, say wood, so as to be burned at times, and not of costly brick or stone, and the cheaper they are the better, if only efficient in other respects. For those intermediate between the early and the advanced cases who are able still to be at their work but too advanced for sanatorium treatment the greatest efforts should be made to instruct them (and indeed the whole people) as to the danger of tuberculosis and how much they can do by carefully disinfecting their expectoration and by not indulging in the filthy and dangerous habit of spitting, which should be made an offence punishable by a heavy fine. Everything that tends to educate the people of Ireland as to the danger of tuberculosis, such as lectures and exhibitions—like the one that is here—is to be encouraged, and I believe the visits among the poor in order to instruct them as to what is now known in regard to tuberculosis (especially as to cleanliness, sleeping in a room by themselves, and the treatment of the sputum) by the members of the various branches of the Women's National Health Association of Ireland will be of enormous aid. In the larger towns a dispensary for tuberculous patients should be instituted.

3. We must educate the people more and more as to the importance of keeping their houses clean and sanitary, well ventilated, not overcrowded, and so situated as to be properly lighted by the sun, and they must be taught what measures they can adopt to prevent the onset and spread of the disease; in other words, we must teach the people that they themselves have it in their own power largely to control the disease.

4. Temperance in all things should be inculcated, as well as the use of nourishing properly cooked food, and the laws of hygiene and temperance should be taught in the primary schools, which should be medically inspected.

5. As to meat, every person, rich or poor, should have a guarantee that all meat used by him has been inspected, and the veterinary inspectors in my opinion should be State officials. There should be public abattoirs or slaughter-houses and all private ones should be abolished. The same type of inspection of meat should prevail in town and country.

6. Considering the teaching of the recent report of the Royal Commission appointed to inquire into the relations of human and animal tuberculosis all cows with tuberculous disease of the udders should be forthwith slaughtered and those that react to the tuberculin test should be branded. The control of our milk-supply is so important that I believe it will never be managed rightly until the State takes it under its care, the regulations for inspection of the dairies (medical and veterinary), and for the clean production, conveyance, and distribution of milk being enforced by experts responsible to the State. It is time the truth was realised that the conditions which maintain health in the cows are very similar to those which we advise for the human race—that is, fresh air, proper ventilation, sunlight, suitable food, pure water, and cleanliness. The Department of Agriculture and Technical Instruction for Ireland and the various agricultural shows and societies, I trust, will unite with the Government in devising means for getting rid of tuberculosis in animals. I admit all these measures I have suggested will cost money and it is clear compensation for loss of cattle will have to be paid; but are we really to speak of money when, on the other hand, we contemplate almost 12,000 lives lost annually (with 120,000 ill) through a disease which science and experience show us is preventable? What money has been expended freely to stamp out cattle plague, foot and mouth disease, pleuro-pneumonia, glanders, swine fever, &c.? Are human beings of less value? To those who think that to rid Ireland of the white plague is an impossible task I reply in the words of the Spanish proverb in Don Quixote, "The beginning of health is to know the disease." We are now thoroughly acquainted with tuberculosis as we never were before and the experience of other countries shows what could be done in Ireland by combined effort. We are no longer in the doubtful position of the sailor of whom Ovid writes: "Hope it is which makes the shipwrecked sailor strike out with his arms in the midst of the sea, even though on all sides he can see no land."

> "Haec [spes] facit, ut videat cum terras undique nullas,
> Naufragus in mediis brachia jactet aquis."

We now see other lands where years ago tuberculosis was far more prevalent than with us, they have since largely got rid of it, why can we not profit by their experience and follow their methods?

I rejoice to know that the public of Lurgan are joining the rest of their fellow countrymen in this glorious campaign to free our land from a plague that too long—largely owing to our want of education—has prevailed among us; but now that our mothers and our wives and our sisters have been awakened—thanks to the splendid efforts of one of the ablest, most benevolent, and large-hearted women that ever lived, Her Excellency the Countess of Aberdeen—we are all full of hope that a better time is in store for our beloved country and that the cloud and the stigma that hang over Ireland at present for her high mortality from a preventable disease will in time be completely removed.

THE EPIDEMIOLOGY OF PLAGUE.

WITH SPECIAL REFERENCE TO ITS MODE OF SPREAD AND THE MEANS BY WHICH IT MAY BE COMBATED.[1]

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THE prevention of plague, even if judged merely from the hygienic and epidemiological standpoint, involves difficult problems which render the subject one of peculiar interest to those who in various lands have the care of the public health. My knowledge of the complicated bearings of the question is derived from the fact that for the past two years I have been studying these problems as they present themselves in the epidemic which is creating such havoc in India. One of the objects of this paper will be to show that there are reasonable grounds for believing that the pandemic of plague now chiefly affecting India may, in the near future, extend itself widely over the world, and by again visiting Europe cause another of those devastating epidemics with which history has made us acquainted.

On the present occasion I will keep as much as possible to the purely practical side of the question, without entering into the clinical, bacteriological, or other aspects of plague.

The subject may be conveniently arranged under the following three heads. 1. The course of the present pandemic of plague from its origin to the present time. 2. The mode of spread of the disease: (*a*) within an infected area, and (*b*) from an infected to an uninfected area. 3. The methods by which the disease may be combated: (*a*) prophylactic measures in uninfected areas, and (*b*) preventive measures in the epidemic zone.

The Course of the Present Pandemic.

For a proper appreciation of the dangers of the situation in which we are placed it is necessary to consider the course and history of the present pandemic from its origin to the present time. Two well-marked centres of endemic plague are now recognised to exist and the forms of the disease to which they respectively give rise are not in all respects alike. The differences, however, are not sufficiently distinct to warrant them being termed "varieties"; they are more correctly spoken of as different "strains" of the same disease and they have been named in accordance with their geographical distribution (1) the Western Asian strain and (2) the Indo-Chinese strain. Of the differences in their characters the two most striking are the greater virulence and power of extension of the Indo-Chinese "strain" and its marked association with rat mortality.

Plague has long been known to exist in Western Asia, but on account of its mildness and lack of power of extension it has come to be regarded with indifference, and public opinion in Europe has come to regard the disease as a purely Eastern one and as possessing no significance for modern Europe. It must be remembered, however, as a very important point, that the disease with which we have to deal nowadays is the virulent and diffusible Indo-Chinese strain of plague and not the milder and less important Western Asian strain. So far as is known the Indo-Chinese strain of plague originated in Yunnan, a province of Western China, about the year 1860, though in all probability it had existed in this little known province some

[1] Abstract of a paper contributed to the International Congress of Hygiene and Demography, held at Berlin in September, 1907.

years previously. From here it appears to have spread slowly and in an uncertain manner in an almost due easterly direction until it reached the coast. The line of its extension corresponds accurately with the chief trade route in this region and it is by reason of its following this course that the Chinese province to the north and India to the south with their teeming millions escaped infection at this time. It reached Pakhoi on the Tonquin Gulf in the year 1867, from which place, and also directly from Yunnan, it travelled to Canton which it reached in 1894; Hong-Kong which is in close proximity to and in intimate commercial relationship with, Canton became infected in the same year. Bombay was infected in 1896, a date which marks an important epoch in the history of the pandemic, for previously no extension inland on a large scale had taken place from any of the infected ports. How the disease was imported into Bombay is not exactly known. Plague cases and dead rats were first discovered in the vicinity of the docks accommodating cargo steamers from Hong-Kong. It commenced in a slow and insidious manner and it was some time before its real nature was recognised. The plague history of Bombay since 1896 has been marked by two features; first, the annual recrudescence of the disease in an epidemic form; and secondly, its extension inland, so that this city has acquired the character of being the great distributing centre from which the disease has spread nearly all over India. The rapidity and extent with which this has taken place have been further increased by the fact that perhaps now, for the first time in the history of the present pandemic, modern facilities of locomotion became available for its dissemination by land.

It was not until 1901 that the epidemic appeared to reach the Punjab, the most northerly province of India; in the spring of 1907 Peshawar, a city in the extreme north-west corner of India, was infected for the first time, and cases of the disease have recently been reported from Jellalabad and Kabul in Afghanistan. In addition the disease is slowly spreading westwards along other trade routes leading from India into Afghanistan; thus Dera Ismail Khan at the head of the Gomul trade route and Edwardesabad at the head of the Tochi valley have this year become infected. Further south, by another route, Seistan is already infected, so that the disease is showing a marked tendency to spread westwards by various channels of communication leading from India. It therefore appears highly probable that sooner or later the disease will make its appearance on the confines of Europe, and whenever this may happen, in consequence of its intimate commercial relations with the East, Constantinople is not likely to escape long. The historical facts of previous known pandemics show that in the first of them which occurred in the sixth century Constantinople (Byzantium) was infected from Pelusium in Egypt and from this city the disease spread widely over Europe. In the second pandemic which commenced in the eleventh century and was afterwards known in England as "The Black Death" the disease, similarly starting from the East, entered Europe by way of Constantinople.

The Mode of Spread of Plague.

The mode of extension of plague epidemics is well illustrated by the occurrences in the Punjab. First of all it is necessary to state that plague exhibits a seasonal periodicity which, though not the same in all places, tends to recur about the same time each year in any particular place. Thus in the Punjab it is only during the period from February to June that plague assumes epidemic proportions.

During the "free season," or that portion of the year in which the epidemic is not present, the disease may be introduced with impunity. For instance, during the period from August, 1906, to February, 1907, plague was imported on 15 occasions into the Jhelum district without it spreading to the inhabitants of the village or, as far as could be ascertained, causing rat mortality. As to the reason for this I am unable to offer any certain explanation, but the disease did not appear to remain latent until the arrival of the epidemic season, for no influence, either immediate or remote, could be traced to its importation at this time. In the month of February when the "plague season" commences a very different story is elicited. The occurrence of imported cases still continues and perhaps becomes more frequent, but now they give rise to rat mortality and to the occurrence of indigenous cases of the plague in man. The various modes by which this may take place will now be considered *seriatim*.

Spread by pneumonic plague.—It is a curious fact that pneumonic plague appears to be strictly confined to the first two months of the epidemic, a point recognised by Guy de Chauliac as long ago as 1348 but which recently does not appear to have attracted much attention, though its existence as a disease since its discovery by Lieutenant-Colonel L. F. Childe, I.M.S., in 1897 is a matter of common knowledge. As to the frequency with which it occurs, this appears to vary from year to year. During the present year, from personal investigations made at the time of the outbreak in 56 villages, pneumonic plague was responsible for the epidemic in nine, or 16 per cent., of the total. All of these occurred in the months of February or March—i.e., during the first two months of the epidemic. During this period it is responsible to a considerable extent for the spread of plague. Thus the effect of the introduction of one case was followed up and traced to five villages where, in spite of efforts made to stamp it out, it caused the death of 27 persons. But this was not all, for in addition it was also responsible for subsequent outbreaks of bubonic plague in two of these villages, with the result that 54 individuals also died from this form of the disease.

The history in all these cases is very similar and shows that the outbreak of the disease closely follows the arrival in the village of an individual suffering from, or incubating, pneumonic plague. It quickly spreads to the other inmates of the same house, often with such virulence that every individual is wiped out in the space of a few days. In my experience recovery rarely, if ever, takes place. The disease also spreads with alarming certainty to those who come in contact with the sick or tend the dying. By these it is spread to other households, who in turn infect their friends and relatives. From the evidence which has been collected it is impossible to resist the conclusion that the infection in pneumonic plague is direct from man to man but that it can also pass with ease from man to rat, and when this takes place an outbreak of bubonic plague on the usual lines follows.

Spread by the agency of man.—So much for the spread of the disease by pneumonic plague. This is, however, not the most usual course of events, for the history obtainable in the majority of cases is that at the onset of the plague season rat mortality was the first sign of the approaching epidemic. In the case of endemic areas no cause for this can be assigned, but in previously uninfected villages it will frequently appear that this has been preceded by the arrival of a person suffering from plague or who developed the disease shortly after arrival. A typical history of such cases is that about one week or ten days after the disease was thus imported by an infected individual dead rats began to be noticed in the vicinity of the house occupied by this individual.

The future course of the disease is characteristic. Starting from the house forming the original focus of infection the area in which dead rats are discovered gradually increases, then in the vicinity of the house in which dead rats were first found a plague case occurs. From this time the epidemic may be said to begin, at first slowly, with perhaps only one or two cases a day; subsequently, as the infected area becomes larger, the plague figures rapidly rise, so that 50, 100, or more fresh cases occur daily. After lasting usually from one month to six weeks it declines and finally ceases in the same order as it commenced.

It is usual to find in bubonic plague epidemics that the rat mortality precedes the occurrence of plague in man, thus giving a warning of approaching danger. Heralded in this manner by the rat epizootic, the epidemic can often be seen to travel from the house forming the original source of infection slowly up and down the street, frequently keeping for some time to one side of the road before crossing over.

In the epidemic in the Punjab this is, in my experience, by far the commonest history obtainable. Thus, of the 56 villages in which during the present year the cause of the outbreak was investigated at the time of its occurrence, in 36, or 64·2 per cent. of the total, the course of events conformed in all essential details to the above.

Spread by infected clothing or merchandise.—At the end of March, 1907, a small merchant visited the village of Lehri, a plague-free area, having come from an infected village some 40 miles distant. He stayed in the house of a relative for four days and then left for Rawal Pindi in his usual health. About two weeks after his departure dead rats were found in the house he had occupied. A few days later, on April 19th, a case of plague occurred in this house; subsequently a rat

epizootic followed by a small epidemic, radiating from this house, spread through the village. No other person was stated to have recently visited the village, which occupies a very isolated position, and was at that time at least 20 miles distant from the nearest infected village. This illustration strongly suggests that the disease was conveyed to the village on the clothing or person of the man or in his baggage, while he himself escaped the disease. In the 56 epidemics analysed, this mode of infection occurred in two, or 3·6 per cent. of the total, and in six others, or 10·8 per cent. of the total, it was thought to have taken place, but accurate information was lacking.

Spread by the migration of rats.—A fourth mode of spread of the disease has been described—namely, that under the influence of the panic occasioned by the epizootic migration of rats from village to village takes place with the result that the infection is conveyed in this manner. My observations on the common rat of India, the black rat (mus rattus), go to show that, as regards this rodent, the spread of the disease between villages can rarely if ever take place by this means. The accidental transportation of infected rats in ships and merchandise is, however, a fruitful source of the disease being conveyed long distances.

A few words are necessary as to the manner in which man becomes infected. This we have seen in the case of pneumonic plague is "direct" from sick to healthy, in the case of the bubonic variety a link between man and the rat appears necessary; that this is supplied, in the majority of cases, by the rat flea, pulex cheopis (Rothschild), the work of the Indian Plague Commission leaves but little room for doubt. But this is not the only mode of infection, as accidental inoculation in the case of man, feeding experiments and infection through the shaved skin in the case of animals abundantly prove. Any method by which the bacillus is introduced into the body is capable of producing the disease. More knowledge is required concerning the habits of the rat flea before its influence can be fully determined, but at first sight the fact that infection may take place in a variety of ways and that in the most virulent type of the disease—pneumonic plague—this insect is not concerned, would suggest that the rôle of the rat flea in the transmission of the disease is a passive one. It has recently been suggested that the occurrence of the annual epidemics are dependent on and associated with the prevalence of the rat flea, but though some relationship does exist between flea prevalence and plague prevalence, this does not appear to warrant the assumption that the flea is anything more than one of the factors in the case.

Preventive Measures.

Up to the present the measures which have been chiefly relied on, and which obtained official recognition at the International Sanitary Convention of Paris (1903), have been confined to the prevention of the importation of the disease and to methods of stamping it out when it has occurred on board ship or elsewhere. These no doubt are very necessary, but they are not sufficient, for it is not always possible to detect every case of plague even in the most favourable circumstances, and, furthermore, a case of human plague is not an essential preliminary to an outbreak of the disease. It is for this reason that the large sums of money spent in the past on disinfection and similar measures have not been attended with success, with the result that not only has the progress of the disease not been arrested, but all anti-plague measures have fallen into discredit.

It therefore becomes necessary to consider what other means are available to remedy this defect. One of the essential requisites is that every sanitary authority should possess a special plague department, the sole duty of which it should be to frame and to carry out the measures suited to the requirements of the area under its control.

The chief means of the spread of bubonic plague from place to place is, we have seen, by the agency of man, and methods designed for the protection of uninfected areas may therefore be directed to the control and supervision of individuals coming from infected areas. It is chiefly on such control that most anti-plague measures in the past have been based but they have not met with invariable success. As regards bubonic plague they are open to obvious objections—namely, that adequate supervision is extremely difficult and that they take no account of the possibility of infection by infected merchandise, clothing, or rats, which, as we have seen, are occasionally responsible for the transfer of the disease from place to place. While therefore not underrating these measures, which should form part of all methods of plague prevention, it is necessary to remember that although man is the agency by which the disease is conveyed from place to place, the rat is the means by which the disease, once imported into a given area, is afterwards disseminated throughout it. On this account I believe that the destruction of rats, combined with the other methods already indicated, will be completely successful in preventing outbreaks of plague in uninfected areas. In my opinion it is to the neglect of this factor of the rat that the failure of anti-plague measures in the past is to be largely attributed.

Any seaport in communication by shipping with an infected port is liable to infection. Here the principal danger lies in the disease being conveyed by infected rats rather than by human agency. Regulations on the following lines are, therefore, necessary and should be made obligatory: (1) all ships communicating directly or indirectly with infected ports should be periodically cleared of rats by the Clayton process or some similar method; (2) in addition other methods of destroying rats should be carried out, such as periodical poisoning or the permanent use of rat-traps, a certain number of which it should be obligatory on all ships to carry; and (3) inspections by the sanitary authorities of ports should be made from time to time to see that these measures are being carried out. To prevent the transfer of rats from the dock to the ship all gangways or other communications between the ship and the shore should be removed at night and a circular iron sheet having a diameter of three feet and a thickness of about a quarter of an inch should be affixed to each hawser or cable both near its attachment to the ship and also at its shoreward extremity. These "rat-shields" would effectually prevent any rats passing from the shore to the ship or *vice versâ*. They should be immediately put in place on coming into port on all occasions.

By the adoption of these measures all danger of infection from the side of the ship would be abolished except in so far as infected merchandise is concerned. Since it is by the inclusion of infected rats, or by infection derived from them, that merchandise usually becomes contaminated the destruction of these animals will materially reduce the danger of this taking place.

Similarly, to insure a condition of safety on shore it is essential that the destruction of rats in all ports liable to infection should be also carried out; and this is particularly necessary in the vicinity of all docks, wharves, and warehouses. Herein lies the necessity for a special plague department, for the work requires to be carried out systematically under careful supervision, such, for instance, as is now the case at Bombay and other places in India. Some central depôt in each town or city is necessary to which all rats captured may be taken for identification and if necessary bacteriological examination for plague bacilli. The question of species is important in view of the fact determined by Liston that the black rat (mus rattus) is by reason of its habits more concerned with the spread of plague than the brown rat (mus decumanus). The relative distribution of these two therefore becomes a matter of importance, but since they are both equally susceptible to the disease their extermination is necessary.

As regards the methods of combating the disease in an infected area reliance must not be placed on any one particular measure, for the greatest hope of success lies in the suitable combination of all methods. Thus the access of infected persons to uninfected areas should, where possible, be prevented. The destruction of rats should be carried out by the best means available, since there is good reason to believe that it is by means of chronic plague in the rat that the disease is carried over from one epidemic to another. It should be carried out in the "free season," and if poisoning is the means adopted it should be carried out just before the breeding season of the rat. On plague breaking out evacuation of infected houses should be immediately resorted to, but much harm will result if the inhabitants flee to uninfected areas; hence, where possible, arrangements should be made to accommodate them temporarily in the vicinity of their homes. Disinfection, except at the very commencement of an epidemic, is entirely useless, but for carrying it out at this time and also for dealing with imported cases a staff for disinfection purpose must be provided and, since the rat-flea is an important means of infection, they should be supplied with a solution such as phenol, which is both a pulicide

and a bactericide. Haffkine's prophylactic should also be available in quantity so that it may be immediately distributed in case of necessity to all those willing to resort to it. As regards medicinal treatment no drugs in my hands have yielded results worthy of mention. Cases of plague appear to be best treated on general principles with the free exhibition of cardiac tonics. In India, at any rate, there is no doubt that a large number of unnecessary deaths take place from heart failure, due either to leaving the recumbent attitude too soon or sometimes directly to fear.

Jhelum, Punjab, India.

GRADUATED LABOUR IN PULMONARY TUBERCULOSIS.[1]

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THE Brompton Hospital Sanatorium is situated on the Chobham Ridges, about two and a half miles from Frimley station, at an altitude of 380 feet. It contains 108 beds, 78 for men and 30 for women. Patients are not admitted directly to the sanatorium but are selected from the in-patients of the Brompton Hospital by the physicians of the hospital.

Early in 1905, while resident medical officer of the Brompton Hospital, I was asked by the committee to organise the new sanatorium which was on the point of completion. I had observed that many tuberculous patients who had followed their ordinary occupations up to the time of admission were in a very fair condition of health. The case of a navvy may be cited as an example. He had worked for 40 hours almost without a rest, altering a water main, a few days previously, and although he had a considerable amount of disease, was apparently none the worse for such arduous work. It occurred to me that, if some consumptive persons under adverse circumstances, and without any medical guidance, could act thus without apparent injury they ought, under ideal conditions and with the work carefully graduated in accordance with their physical state, to be able to undertake useful labour. On this assumption manual work should be of great advantage to patients undergoing treatment in a sanatorium, as, first, it would do much to meet the objection that members of the working classes are liable to have their energy sapped, and to acquire lazy habits by such treatment; secondly, it would make them more resistant to the disease, by improving their physical condition; and thirdly, would enable them by its effect upon their muscles to return to their work immediately after their discharge. The idea was a new one and in opposition to the generally accepted medical opinion on the subject. It had, however, been shown by Dr. Otto Walther of Nordrach that excellent results could be obtained by graduated walking exercise, especially when, in suitable cases, this exercise was pushed to the extent of walking 20 miles a day. In this form of exertion, however, the muscles used were chiefly those of the lower limbs. I had it in mind to employ also the upper limbs which are supposed to have a more direct influence on the expansion of the lungs. The objections naturally raised to this method of treatment were: (1) that the disease would become active again under the strain; and (2) that the exertion would tend to produce hæmoptysis.

At the outset great care had to be exercised, not only from the fear that as the views which had led to the adoption of the method were possibly unsound, harm might be done, but also because the patients did not take kindly to the work, it being absolutely contrary to their preconceived views of treatment, suitable to their condition. Some of them imagined for a time that it was not designed for their benefit but purely for the advantage of the institution, and they regarded me rather as a labour master trying to get so much work out of them than as a medical man who was endeavouring to cure their disease. Care was especially necessary in the selection of patients for the work, as had there been a case of severe hæmoptysis, or of high fever or pleurisy, it would probably have been impossible to convince the patients that the method was sound and they would have refused to work.

[1] A paper read before the Medical Society of London on Jan. 13th, 1908.

Walking exercise was first ordered, the distance being gradually increased up to 10 miles a day. When a patient had reached this stage he was given a basket in which to carry mould for spreading on the lawns, &c. No case of hæmoptysis or of pyrexia occurred among these patients. When they had been on this grade with nothing but beneficial results for from three weeks to a month, they were given boys' spades with which to dig for five minutes, followed by an interval of five minutes for a rest. After a few weeks several of the patients on this work, who were doing well, were allowed to work as hard as possible with their small spades without any intervals for rest. As they had all improved on this labour larger shovels were obtained, and it was found that the patients were able to use them without the occurrence of hæmoptysis or of a rise of temperature. About this time many of the patients were feeling so well that it became necessary to restrain them from doing too much. The tradition of absolute obedience to the orders as to the amount of work to be done had not yet been firmly established, and one of the patients who had improved most of all was found wheeling a heavy barrow full of sand without permission. When admonished for infringing his instructions he replied that he felt quite fit for such work, and as he would have to leave shortly and do hard work he wanted to get into condition for it. This argument appeared to be sound, and as he was willing to take the risk he was allowed to continue to wheel the barrow for the full labour period, which at that time was three hours a day. He suffered no ill-effects, but, on the contrary, did exceedingly well, and has since been at work for over two years. It was thus shown that a tuberculous man could, in certain instances, do heavy manual labour and continue to improve in health. I accordingly decided to work out a carefully graduated scale of labour.

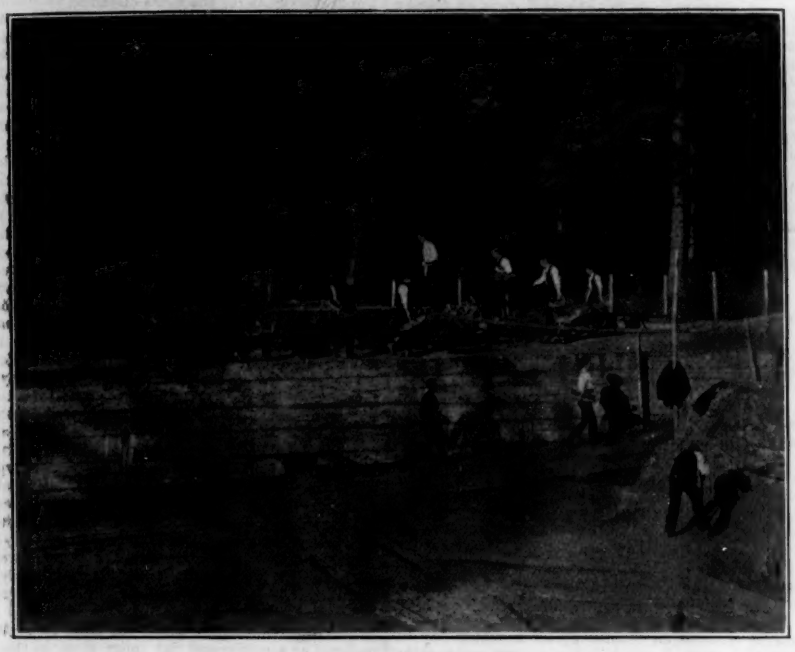
At the end of the first six months a great advance had been made, for the tradition of work as a method of treatment was firmly established and the patients saw clearly that it was for their own benefit. The extension of the system required great care and minute supervision, for the patients, far from objecting to, or attempting to shirk, their appointed labour, now had a tendency to do more than they were ordered. Harder work was first prescribed for those patients who could be trusted. It was found that they could gradually be trained to use the heaviest spades, shovels, and 5-pound pickaxes with advantage to their physical condition, and without any attack of hæmoptysis or rise of temperature. The patients all expressed the opinion that the work did them good and that the harder they worked the better they felt. Many patients have since written to say that they date their improvement from the commencement of the labour and that they think that the hardest work did them the most good. Within the first year there were several patients who would, despite all instructions, over-exert themselves and use heavier tools than they should have done. In most instances no serious harm resulted but several of them developed fever and subsequently pleurisy. Pleurisy, indeed, appears to be a frequent result of any excessive work. One of these patients was laid up for nearly two months and was much worse at the end of that time, although eventually he did well and is now at work, but the extent of his disease was increased by the over-exertion. The necessity of absolute obedience to the medical officer's orders was firmly established by such cases. Each patient on admission is told that he will be treated by prescribed rest and exercise and that as he does not himself know the amount of rest or exercise which he requires he must do exactly as he is told, and that whilst harm will result if he does too much he will not receive proportionate benefit if he does too little. It is also pointed out that he must consider himself under treatment for the whole day, the amount of rest and exercise being definitely fixed for the 24 hours.

Details of the System of Graduated Labour.

1. *Results of physical examination.*—Each patient on arrival at the sanatorium is examined and the extent of the disease as indicated by physical signs is noted. The patients are then divided into two classes: (*a*) Those with early disease—i.e., slight signs in one or two lobes; and (*b*) those with more extensive disease—i.e., with either extensive infiltration of one lobe, or infiltration of two, three, or four lobes of some duration, the lesions often showing signs of fibrosis.

2. *General condition.*—The next points noted are the facial expression and the general physical development of the

FIG. 1.



Grade 1.—Basket work.

FIG. 2.

Grades 4 and 5.—Pickaxe and barrow work.

patient. These points should always be considered together with the physical signs, as a patient with tubercle bacilli in his sputum may look very ill and have marked wasting and poor development, even though no physical signs of disease are found on examination of the chest. Such a patient is quite unfitted for much, if any, exercise, whereas a patient looking fairly well, of good development, but with physical signs indicating that even as many as four lobes are affected, may be quite capable of considerable muscular exertion. It must be remembered that the resisting power of a patient with a very limited lesion is practically an unknown quantity and has to be determined, whereas a patient with a lesion involving four lobes who has continued at work for some time and has remained, in spite of the disease, in fair condition probably had a good initial resisting power.

3. *Presence or absence of fever.*—The next point for consideration is the temperature, which is taken in the mouth. Should this be, or have been, 99° F. or over during the week preceding admission to the sanatorium the patient is put to bed after the journey. So long as the temperature remains at 99° in the case of men or 99·6° in the case of women the patient is not allowed up for any purpose. Work is prohibited and reading is the only recreation permitted. Naturally the object of this stringent rule is to try to check the activity of the disease. I consider that if a patient with few signs of disease, when absolutely at rest in bed, still has a temperature of 99° active disease is present. Such patients are usually kept together in one ward for the sake of cheerfulness, male and female patients being of course in separate wards. After the temperature has been normal for a week or ten days the patient is allowed up for dinner but returns to bed as soon as the meal is finished. So long as the temperature is unaffected by this exertion the patient is gradually allowed up for longer and longer periods. In practice it is found that the longer the time the patient has had to stay in bed before his temperature subsides to, and remains at, the normal level the more protracted must be the period before he can be allowed to remain up for a whole day in safety. When this stage is reached the patient commences to work with the fingers, sewing, making mats, mops, &c.

4. *Exercise.*—If the general condition and appetite are good and the patient is feeling well after from 10 to 14 days of this treatment he is allowed to walk half a mile a day for a week. He then gradually goes through the grades of exercise subsequently to be described as suitable for those patients whose temperature is normal. Patients with apparently limited disease, but who are in poor general condition and without fever, are allowed to be up all day but are not permitted to take further exercise than is entailed by walking to and from the dining hall for their meals. The remainder of the day is spent resting, and work entailing no physical exertion is allowed with the sole object of occupying their minds. As their condition improves they are allowed to walk half a mile a day, then a mile a day, and so on, until a distance of six miles a day is achieved. The rate of increase in the amount of exercise depends upon such factors as the patient's disposition, weight, and appetite. It is not possible to make a definite statement as to the number of days during which the patient should be set to walk half a mile, two miles, four miles, and so on, as each case requires to be judged on its merits and on the response to treatment. A patient allowed to walk a mile a day for 14 days may be doing well yet the increase of half a mile may cause the temperature to rise to 99°. If this occurs he is then ordered to rest for a day or so before recommencing with a mile a day. It will thus be seen that the exertion required for each grade of work acts as a test not only of the fitness of the patient for such labour but also of his fitness for an increased amount of exercise.

The grades of work may be summarised as follows: (A1) Walking from ½ mile to 10 miles daily; (1) carrying baskets of mould or other material; (2) using a small shovel; (3) using a large shovel; (4) using a pickaxe; and (5) using a pickaxe for six hours a day. Patients in Grades 1, 2, 3, and 4 work for four hours a day.

Grade 1.—Basket work is subdivided into three sections. In the first the patient carries a load of about 12 pounds in weight a distance of 50 yards up a gradient of 1 in 10·7—i.e., rising 14 feet in that distance. Such patients carry in a day 80 loads, or, in other words, they will carry 8½ hundredweights a distance of 50 yards and return for a distance of 4000 yards with the empty basket. In the second section the weight carried is about 18 pounds, the conditions being the same, and these patients carry about 13 hundredweights per day. In the third section the weight carried is 24 pounds. A patient on this work carries during the day about 17½ hundredweights for the same distance.

Grade 2.—The small shovel is the ordinary coal scoop provided with a long handle. Patients commencing on this grade of labour will dig two tons of earth a day and raise it seven feet into a cart, and as they increase in strength will in a day lift about four tons the same height.

Grade 3.—The large shovel is the ordinary shovel used by a navvy. Patients on this grade will dig and lift about six tons a day a distance of seven feet.

Grade 4.—Pickaxe work is the hardest work possible, and consists of breaking unbroken ground, excavating, &c.

Concrete mixing comes under the heading of pickaxe work, as although the large shovel is used the work is heavier than moving sand or mould. Each man moves about ten tons a day and *has to keep going* or he stops the whole of the men, whereas on the other work he can take his own time.

When a patient has been on a grade of labour for about three weeks his fitness for harder work is considered. If the temperature has been normal, the weight satisfactory, the appetite good, and if he is feeling well (this is to be determined by watching the way in which he performs his work) then he is put on harder work. Here may be noted an interesting psychological effect of physical improvement. Many patients on their arrival are somewhat remarkable for a certain sullen and apathetic attitude, but as soon as their physical condition undergoes amelioration all traces of gloom and depression leave them and they become transformed into lively, cheerful individuals. After three weeks it is usually found that the patient who is working within his strength is of his own accord working harder than he did when first placed in that particular grade. This is specially noticed with "basket men," who carry about 8 pounds weight of earth. The quantity is gradually increased and finally the patient is allowed to fill his own basket, which he usually does to its fullest capacity.

I consider the basket grade the most important of all, and patients as a rule spend far more time in this grade than in any other. I regard it as the connecting link between walking and work. It does not entail much exertion and yet brings into use nearly all the muscles of the body and so fits the patient for light work. I am always careful to have a definite and apparent object in this and all work, so that the patients can see the result of their labour. Patients hate nothing more heartily than work which is of no practical utility.

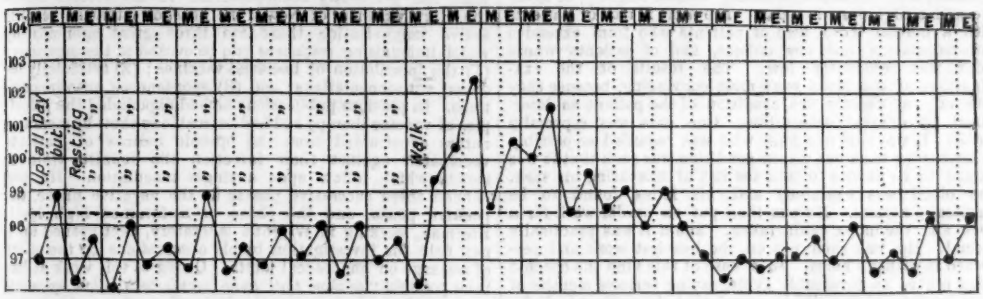
Patients who have successfully gone through the above grades and worked for six hours a day are three weeks before their discharge put to work at their trades, if they have a trade, in order that the muscles used in their particular work may become accustomed to it before they leave the sanatorium. These examples are given to show approximately what amount of energy is exerted in each grade of labour. Patients are not confined to the work enumerated above but are given other work corresponding in severity to the use of the tools mentioned. For instance, painting, hoeing, and chopping wood are equal to the work of Grade 2. Sawing trees into firewood is equal to the work of Grade 3. Planing wood is equal to the work of Grade 4. Any form of labour can be utilised, but an estimate must be made of the amount of energy which it involves. Patients who have reached the stage of walking four miles a day or any higher grade of work make their own beds, change their bed linen, clean their wards and windows, polish the floors of adjacent corridors, and keep the dining halls clean and the brasswork bright.

The grades of exercise and work for the women are similar to those for the men, but the various implements, such as baskets, shovels, &c., are of smaller size. These patients are not allowed to work as hard as the men and consequently do not accomplish as much in the same time. They also keep in order their own part of the grounds, cultivate a small kitchen garden, and, in addition, they have charge of the poultry. The final grade corresponding to the hard navvy work of the men consists of scrubbing work indoors.

One of the first indications that a patient is taking too much exercise is that he loses his appetite and suffers from slight headache. If he continues to do the same amount of work the temperature will rise to 99°. This temperature is the danger signal and any patient who has a temperature of 99° and is suffering from the slightest headache is immediately ordered to bed. In cases of extensive disease—e.g., of

three or four lobes with fibrosis—a temperature of 99° has not the same significance, but it is still regarded as a danger signal and the patient is specially watched. A temperature of 99·6° in women appears to correspond with the temperature of 99° in men. It is necessary to emphasise the importance of the significance of a temperature of 99°. If this degree of fever is observed and the patient is ordered to rest for a few days no harm will result, but if it is disregarded and the patient continues to work he will, later, in addition to the headache, complain of pains in his joints and limbs, a condition very closely resembling influenza. Indeed, this result of over-exertion is often called influenza. Should the patient still continue to work or should he have against orders very much over-exerted himself the temperature will rise to 100° or over and pleurisy may develop. This complication seems to be the invariable result of excessive work or overlooking the danger signal—i.e., the temperature of 99°.

The following facts are significant. During the first year that the sanatorium was opened the patients were allowed to play games, such as croquet, quoits, &c., in the evenings and on Saturday afternoons, but it was soon found that many patients in this way took too much exercise. Their improvement was not satisfactory, as they were apt to get too keen over the games and to forget that they were under treatment. A rule was therefore made that patients were not to play any games, such as croquet, until they had reached the stage of basket work. Much better results followed its adoption. The reason is obvious: a patient walking his prescribed four miles a day is having sufficient exercise, but if he plays a game of croquet in addition he has too much. It was therefore established, and it is a fact of the utmost importance, that the hours of recreation must be regulated with just as much care as the hours of work. The accompanying chart shows the



effect produced by an act of indiscretion upon the temperature of a patient who should have been resting all day. It occurred upon a certain summer evening when, as he considered himself to be free from control, not having realised that he was always under treatment, he went for a short walk of about half a mile. Playing the piano or singing must be regarded as exercise, as I have known a musical patient after an hour at the piano experience a rise of temperature to 99°, with headache and general malaise.

After the sanatorium had been opened about 18 months and further experience had been gained I came to the conclusion that the patients who had a slight rise of temperature (99°) as a result of over-work, and for whom in consequence rest for a few days had been prescribed, were not infrequently not only none the worse for this sequence of events but rather the better. Some patients even appeared to date the commencement of their improvement from the period of rest following over-work. It was accordingly decided to be unnecessary to put these patients back to the earliest grade of work and they were permitted, after a few days' walking exercise, to recommence work in the grade reached when they suffered from over-exertion. This practice has been continued ever since with satisfactory results but it is impossible to lay too much emphasis on the fact that such patients require to be watched with especial care as regards loss of appetite, the presence of *headache*, or of a rise of temperature. In the course of my earlier experience I observed cases of another type—i.e., patients who from the indications given by the temperature, appetite, and demeanour, ought to have been doing well but who remained in a stationary condition, and were in fact only "marking time." It was doubtful whether such patients should be given harder work or more rest. They were considerably under the normal weight and their general state did not suggest a capacity to undergo an increase of labour. After careful consideration it was determined to try the effect of harder work with a view to improving the appetite. I am glad to state that all such patients have shown progressive improvement on being given work of a higher grade.

The diet is liberal and consists of the ordinary food which the working-classes provide for themselves when they are in a position to afford it. The patients have three meals in the day. Breakfast consists of bacon, &c.; dinner consists of meat and suet or milk puddings; and supper consists of soup, oat cakes, Cornish pasties, or cheese, &c. For the first 16 months the patients used to have three pints of milk and an egg every day; now they only have milk in their tea, coffee, and puddings, and they are not given an egg every day, but they do just as well on this as on the more stereotyped and conventional form of diet and do not become excessively corpulent. Of course, patients who are very emaciated have milk if it is thought necessary, but as a routine milk is not used except as it would be in their own homes. The standard aimed at as regards nutrition is to raise the patient's weight to a few pounds above his highest known weight or to a few pounds above the normal weight for his height. Patients who tend to become excessively fat have their diet reduced in quantity.

Medicines such as cod-liver oil, malt, &c., are not used. Practically the only drugs prescribed are aperients.

The following work which has already been accomplished will show the scope and variety of the tasks which the patients have performed. About 900 tons of mould, sand, and gravel have been carried in baskets an average distance of 200 yards. The whole establishment has been kept in firewood; it has not been necessary to obtain any from outside sources. The boots of the patients and staff have been kept in repair. The patients' block of buildings has been painted. The whole of the grounds has been kept in order. In addition to these occupations the patients have been engaged in mixing and laying 1000 tons of concrete and in excavating and moving to a distance of 300 feet 5000 tons of sand in the construction of a reservoir. The reservoir is 108 feet long, 54 feet wide, and 12 feet deep; and the walls are 4 feet thick at the base and 1½ feet at the top. In addition 3½ acres of land have been trenched, cleared, and brought into cultivation.

In order to ascertain the results of the system of graduated labour, all patients on their discharge have been requested to keep the administration informed as to their progress.

In considering the following results of the treatment of pulmonary tuberculosis by graduated labour it is to be distinctly understood that I have only quoted the cases of patients who went through all the grades and eventually performed the highest work. Furthermore, all these individuals were patients who were discharged during the years 1905 and 1906, so that the statistics refer to patients who have been at work for from one to two and a half years. Of the above-mentioned patients the number discharged during 1905 and 1906 was 164. Of these 119 had tubercle bacilli in their sputum; four had physical signs and gave a tuberculin reaction; one had definite signs, but the sputum was not examined; 31 had definite physical signs, definite histories and definite symptoms of pulmonary tuberculosis but no tubercle bacilli were found in their sputum when it was examined at the sanatorium; and nine had histories and symptoms of pulmonary tuberculosis but no physical signs and no bacilli were found in the sputum, nor were they

tested by tuberculin. These nine cases are left out as to their after-results, so that the number to be accounted for is 155. Of these, 135 are at work, nine have not reported themselves, nine are not at work, and two are dead.

A point which I wish to emphasise is that all of the above patients returned to their previous occupations whatever they happened to be, and not to light out-door work. To advise the latter has always seemed to me like recommending plenty of good food and milk to those who are practically penniless: excellent advice but impossible to carry out.

Some ten months ago Dr. A. C. Inman suggested to me that the explanation of the satisfactory results obtained from the system of graduated labour was that the work caused an inoculation of the patient by his tuberculin. This theory, the origin of which is given in Dr. Inman's paper, was supported by the fact that after a rise of temperature, and therefore an auto-inoculation, patients were often better than before, and that patients who were not improving on a certain grade of work did improve on harder work. The theory is that the harder work gives rise to an auto-inoculation whereas the lighter work fails to do so. For the past ten months I have used this as a working hypothesis in determining the suitability of a patient for any particular grade of labour and have found it to be of very great assistance. The method entails a more careful graduation of the labour, as two important questions have to be answered: 1. Is the patient doing work which is too hard? 2. Is he doing sufficient work to keep himself properly inoculated? In other words, suitable work has to be found for what is regarded as the exact medical condition of each patient. When Dr. Inman commenced to examine the bloods of the patients and required cases of a certain kind I was able to find without any difficulty examples of cases required: as, for instance, a patient who was auto-inoculating himself slightly, or again one with a high opsonic index. The same is true of patients with a normal index, also of patients who from excessive auto-inoculation had low indices, and of patients whose index was constantly low. The results of the examinations of the blood were most convincing, because they bore out so exactly the condition of the patient as determined by clinical observation. One case was especially useful. It was that of a man who was regarded as possibly fit for harder work but whose condition was such that it was judged to be unwise to take the risk of increasing his task. The blood was examined and his index found to be practically normal. He was then put on harder work for a week and the index again taken. Again it was practically normal. He was then put on the heaviest work and performed it without harm. In a case of this kind the opsonic index proves an invaluable guide, saving perhaps months of time, by determining within a week that the patient is fit for the hardest work, when clinically we should hesitate to come to such a conclusion. Dr. Inman's work, so far as it has gone, confirms the value of graduated manual labour in the treatment of pulmonary tuberculosis and has done so in a manner that could only be determined by a further trial lasting over several years.

The points so far determined appeared to me to be as follows. 1. Suitably selected patients can be gradually trained to do the hardest navvy work for six hours a day, the result being that their general condition is much improved whilst some lose both their sputum and their tubercle bacilli. 2. Certain patients who do not improve on light work show marked improvement on harder work. 3. Patients who have slightly over-exerted themselves and are kept at rest for the few following days are subsequently not only not worse but may be in their own opinion better.

My observations so far lead me to the conclusion that graduated labour is a definite medical treatment for cases of pulmonary tuberculosis and raises the general health and resisting power of the patients.

Finally, I should wish to express very strongly the opinion that the combination of rest, pure air, and over-feeding is not the only treatment for chronic pulmonary tuberculosis and equally strongly to advise those physicians who may adopt these suggestions contained in this paper to pay particular heed to the word *graduated* and to remember the importance of the temperature of 99° F.

Frimley.

A NEW MEDICAL PASHA.—Professor Wieting, director of the Osman Clinical Hospital, Gulhane, Constantinople, has been raised to the dignity of a Turkish Pasha.

THE EFFECT OF EXERCISE ON THE OPSONIC INDEX OF PATIENTS SUFFERING FROM PULMONARY TUBERCULOSIS.[1]

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(From the Bacteriological Laboratory of the Brompton Hospital.)

THE study of the part played by the blood as a protective agent in bacterial infections has recently entered upon a new phase. Hitherto the subject had been mainly one of scientific interest only; the results obtained and the principles and theories evolved had been for the most part confined within the walls of the laboratories. The phagocytic action of the white corpuscles and its rôle in immunity had ceased to interest the clinician. The discoveries of Ehrlich, brilliant as they were, were appreciated by few who were not pathologists, the "side-chain theory" with its difficult nomenclature having but little effect on bedside medicine. But the publication of Sir Almroth Wright's investigations and the principles of immunity expressed by him have not only thrown a new light upon clinical problems hitherto in obscurity but have produced results and suggested inquiries of great importance in the domain of practical medicine. Wright, by a modification of Leishman's technique, completely separated all three elements necessary for the phenomenon of phagocytosis—viz., white corpuscles, serum, and bacteria—and was thus able to investigate the rôle played by the blood in bacterial infections more fully than had previously been possible. In his lecture before the Harvey Society of New York he shows that as regards active immunisation there are three great agencies by which immunising responses can be evoked in the organism: (1) the inoculation of bacterial vaccines; (2) artificially induced auto-inoculations; and (3) spontaneous auto-inoculations. In previous publications he had expounded the principles of vaccine therapy and had been able to show by means of curves constructed from the opsonic indices of patients vaccinated against their infection the definite train of events which follow upon a single inoculation. He has defined these successive phases as the negative phase, the positive phase, and the phase of maintained high level. Freeman, working in Wright's laboratory, next opened up a new field for investigation by his observations on the effect of massage on gonococcal joints. Owing to this work it has been possible "*to show that auto-inoculations follow upon all active and passive movements which affect a focus of infection and upon all vascular changes which activate the lymph-stream in such a focus.*" Further, it is obvious that, as Wright puts it, "where in association with a bacterial invasion of the organism bacteria or bacterial products pass into the general lymph- and blood-stream intoxication effects and immunising responses, similar to those which follow upon the inoculation of bacterial vaccines, must inevitably supervene." And it is by the agency of such auto-inoculations that nature achieves curative effects in bacterial infections. The far-reaching importance of these observations on spontaneous and artificially induced auto-inoculations decided me to investigate the part played by auto-inoculation in pulmonary tubercle. Moreover, it is obviously desirable before attempting to treat a disease, however rationally, to try to find out what the body is doing of itself and to what extent extraneous circumstances, such as movements, influence these attempts on the part of the body.

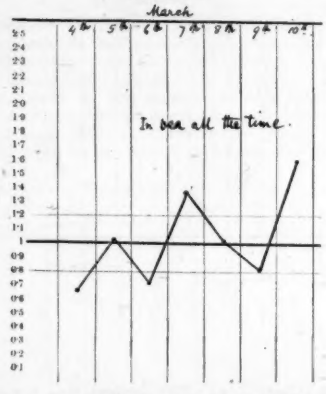
The technique.—In these experiments the technique as carried out by Wright and Douglas has been followed. 1. The corpuscles were very carefully washed in sterile salt solution (0·85 per cent.) after the first centrifugation so as to get rid of all traces of serum and citrate solution. 2. The emulsion. A culture, obtained from a solid medium, and suspended in 1·5 salt solution was used. 3. The serum was always collected in Wright's tubes and the blood allowed to clot at room temperature. The blood was always examined the same day as it was drawn, usually within five or six hours. Before each experiment a "trial trip" was made with the normal serum with a view of seeing that all the

[1] A paper read before the Medical Society of London on Jan. 13th, 1908.

constituents of the experiment were satisfactory. In the case of the normal serum, an attempt was always made to obtain an average count of one bacillus per cell—i.e., an average of about 100 bacilli in 100 cells. In all experiments 100 polymorphonuclear cells were counted. The films were stained as follows: 1. Fixed in a saturated solution of hydrargyrum perchloridum, one quarter of a minute. 2. Stained with Ziehl's carbol-fuchsin, warm, one minute. 3. Decolourised with sulphuric acid 2½ per cent. 4. The red cells were decolourised with acetic acid, 4 per cent. 5. Counterstained with aqueous methylene blue, 1 per cent. With a view to eliminating as far as possible the personal element and to prevent the possibility of a biased mind influencing the results all experiments were made with unknown bloods. That is to say, after the bloods to be examined had been drawn each blood-tube, bearing the name of the patient, was handed over to the assistant who rubbed out the names and replaced them with numbers, in any order he liked, and kept this key to the bloods himself. The indices were then worked out by experiment before seeing the key, and afterwards the curves exhibited in this paper were constructed. *Thus in no cases during the experiment was it known which blood was being examined.* It was found in practice that when examining day after day a number of such unknown bloods, several samples of the blood of a single healthy individual mixed with other bloods showed indices which varied rather over one decimal place on either side of unity. Further, it has been determined by Bulloch and others that the bloods of presumably healthy individuals present opsonic indices varying between 0·8 and 1·2 on either side of unity. It was therefore decided to regard all indices within these limits as normal.

Before considering the effect of exercise upon the opsonic index in pulmonary tuberculosis it must be mentioned that in active disease spontaneous auto-inoculations are continually taking place even though the patient be at rest. Such patients, as Wright has expressed it, are living in "a succession of negative and positive phases." Chart 1 is an

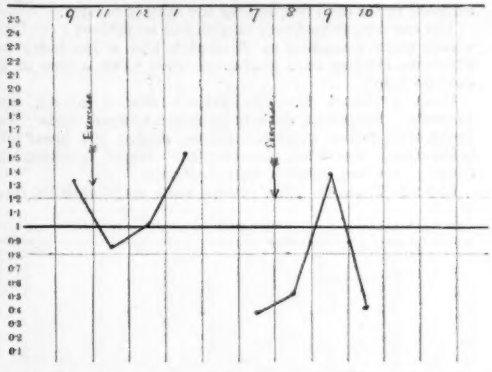
CHART 1.



example of this. Further, it must be remembered that the degree of auto-inoculation is in proportion to the activity of the disease. There are cases, indeed, in which auto-inoculations cease when the patient is at rest but reappear after any movements sufficient to affect the focus of infection. In all charts which follow the first index was taken before the patient had got out of bed in the morning, the second was taken immediately after exercise, and the third and fourth during a subsequent rest of from one and a half to two hours' duration. Chart 2A graphically represents the effect of exercise on the opsonic index in cases of early pulmonary tuberculosis, Chart 2B the absence of variation in healthy persons.

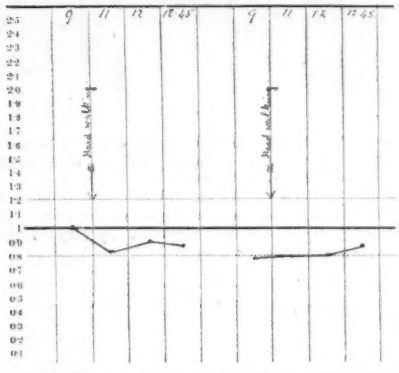
Wright points out when comparing the respective advantages of artificially induced auto-inoculations and inoculations of bacterial vaccines as means of treatment in bacterial infections that if the former method is adopted unmeasured doses of a living culture are being used, and therefore the method can never be entirely dissociated from risk. Now at the Brompton Hospital Sanatorium at Frimley during the past two and a half years the patients during their stay have been treated by gradually increasing amounts of work, the last grade being full navvy work, almost as severe as it is possible for even a healthy individual to accomplish. In spite of the greatest difficulties Dr. M. S. Paterson, the medical superintendent, has evolved a scheme of very

CHART 2A.



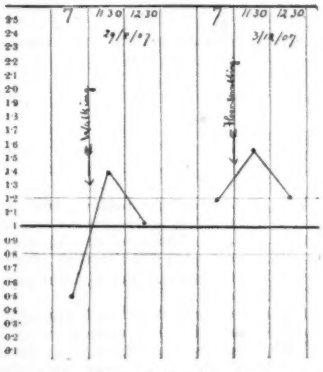
carefully graduated work-exercise, beginning with gentle walking and ending with concrete-making, excavation work, &c. This has been accomplished with tuberculous patients, many of them showing extensive signs of disease in the chest,

CHART 2B.



with expectoration containing tubercle bacilli, but without fever. The treatment has been remarkably successful. It has only been possible to accomplish this (1) by instituting the most careful graduation of the exercise; and

CHART 3.



(2) by close observation of the temperature chart, work being at once stopped when fever appears. It follows from what has gone before that the work-exercise scheme at Frimley must be associated with auto-inoculation and at

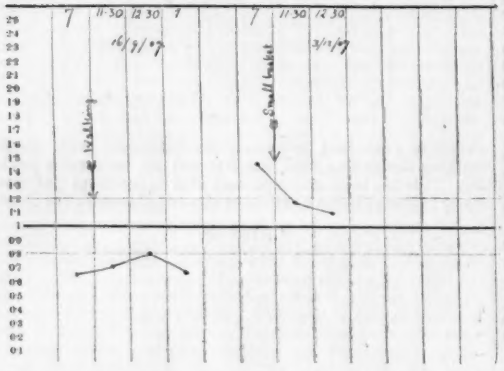
probably the treatment consisted unintentionally of carefully graduated, artificially induced auto-inoculations. It was therefore decided to investigate the Frimley cases from this point of view and the following observations were made during a stay of one month at the sanatorium. In all, over 300 bloods were examined, from which a few cases only are selected under each heading for the sake of brevity.

The cases examined may be grouped as follows: (*a*) Cases which when examined at Brompton had a low index and which at Frimley with graduated work show a rise of the opsonic index.

CASE 1 (Chart 3).—The patient was a female, aged 18 years. Diagnosis, chronic pulmonary tuberculosis. Left upper lobe, rather quiescent second stage; left lower lobe, infiltration. Duration, nine months. Onset, insidious with cough. Sputum, tubercle bacilli present.

CASE 2 (Chart 4).—The patient was a male, aged 26 years.

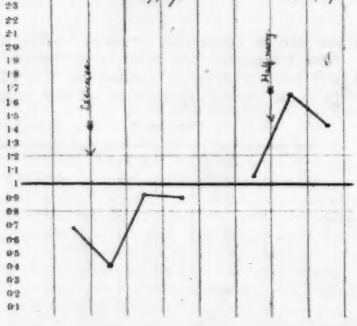
CHART 4.



Diagnosis, infiltration of the right upper and lower lobes. Duration, 16 months. Onset, cough and hæmoptysis. Sputum, tubercle bacilli present.

CASE 3 (Chart 5).—The patient was a male, aged 26 years. Diagnosis, infiltration of the right upper lobe. Duration, one year. Onset, cough followed by large hæmoptysis. Sputum, tubercle bacilli present.

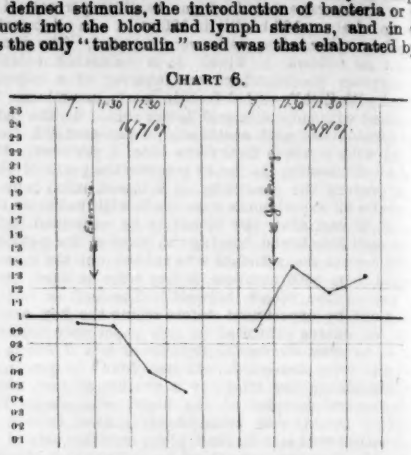
CHART 5.



CASE 4 (Chart 6).—The patient was a man, aged 23 years, a bookbinder. Diagnosis, chronic pulmonary tuberculosis. Extent, extensive infiltration of the left upper and left lower lobes; infiltration of the right upper lobe. Duration, 11 months. Onset, hæmoptysis. Sputum, tubercle bacilli present.

It might be argued that these high readings were not the result of auto-inoculation but merely of increased general physical fitness due to fresh air, &c., as obtained by sanatorium life. If a high index were merely evidence of a better resistance to the disease this might be so, but the high index expresses the fact that in the serum of the patient under observation there are substances which increase the phagocytic power of the white cells in excess of those contained in the blood of any healthy non-tuberculous subject. These substances are elaborated only in response to a defined stimulus, the introduction of bacteria or their products into the blood and lymph streams, and in these cases the only "tuberculin" used was that elaborated by the

CHART 6.

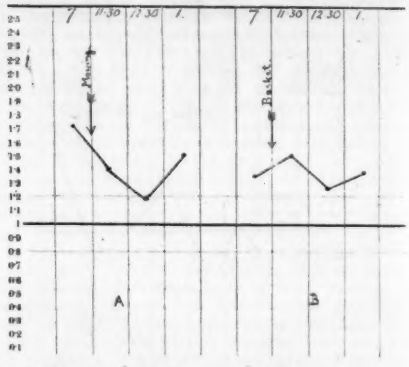


patient from himself and for himself. Thus we are dealing with examples of artificially induced auto-inoculation.

(*b*) Investigations on cases working on the different grades of the labour scheme.

CASE 1 (Chart 7, A).—The patient was a male, aged 21 years, a clerk. Diagnosis, chronic pulmonary tuberculosis. Infiltration of the left upper lobe and apex of the lower lobe. Duration, seven months. Mode of onset, cough. Sputum, tubercle bacilli present. The patient is doing very well on full work. He has lost sputum and tubercle bacilli. The temperature is normal. He is now two stones over-weight.

CHART 7.



CASE 2 (Chart 7, B).—The patient was a male, aged 39 years, a carrier. Diagnosis, chronic pulmonary tuberculosis. Right lung, upper lobe, second stage early; lower lobe, first stage. Left lung, upper lobe, second stage early. Duration, two years. Onset, insidious (hæmoptysis +). Sputum, tubercle bacilli present. The patient is doing well on light work. The temperature is normal. Still expectoration with tubercle bacilli.

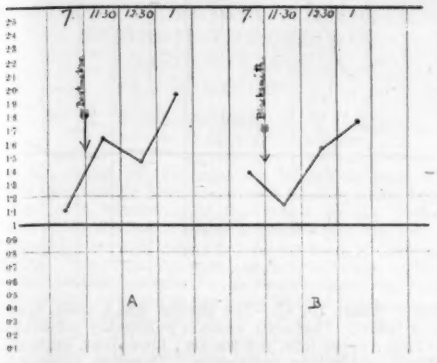
CASE 3 (Chart 8, A).—The patient was a male, aged 24 years, a general labourer. Diagnosis, chronic pulmonary tuberculosis. Extent, right upper lobe, excavation; left upper lobe, infiltration. Duration, three years. Onset, hæmoptysis. Sputum, tubercle bacilli present.

CASE 4 (Chart 8, B).—The patient was a male, aged 22 years, a blacksmith. Diagnosis, chronic pulmonary tuberculosis. Pleurisy left side. Infiltration of the left upper lobe. Duration, seven months. Onset, insidious (hæmoptysis +). Sputum, tubercle bacilli present.

It was found that in 41 out of 43 cases the index was at some time of the day well above the normal, and, what is of even more importance, in no case did the exercise, even though severe, lower the index below the normal line—that is, the auto-inoculation was never so great as to produce a

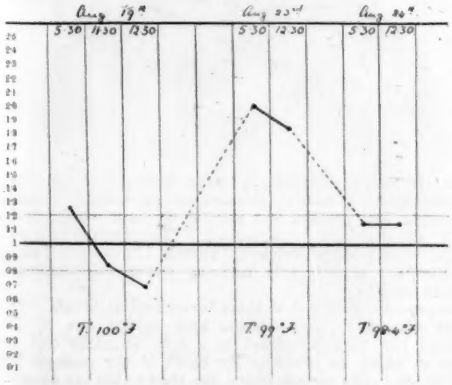
negative phase and therefore never in excess. It was observed during these investigations that in some bloods examined tuberculo-agglutinins appeared in association with the immune tuberculo-opsonins. This must be taken as another evidence of an immunising response on the part of the organism. When the difficulties of such a method of treatment and the danger of the weapon employed are taken into consideration it will be readily understood that every now and then, in spite of the most careful supervision, an excessive auto-inoculation must take place. Such

CHART 8.



an over-dose is readily recognised clinically. A patient previously doing well on the grade of work prescribed for him and with no abnormality of temperature suddenly complains of feeling tired, of loss of appetite and of headache, and the temperature chart registers an elevation to 99° or 100° F. These are precisely the symptoms which are found during the negative phase after an excessive dose of bacterial vaccine. Owing to the extreme care and judgment exercised by Dr. Paterson in the selection of suitable work for the patients and to the rigid supervision carried out, not only during work hours but throughout the day, these over-doses are very infrequent at Frimley. During my stay of one month at the sanatorium only two transient instances of such over-dosage occurred, and in both cases the opportunities were taken to examine the bloods (Charts 9 and 10). In both cases then the febrile rise and other

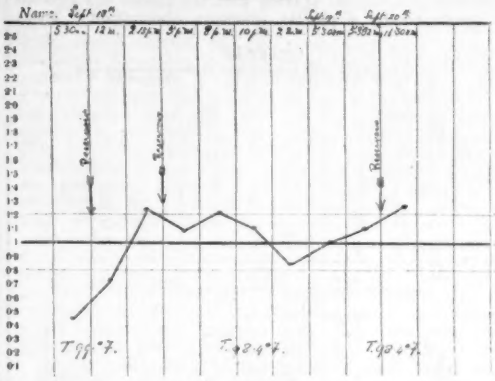
CHART 9.



symptoms coincided with a negative phase; and while in both cases a positive phase appeared afterwards, in the first the recovery was simultaneous with the decline of the fever. It should be noted that this patient was kept in bed, while the other was allowed to do modified work during his pyrexia.

(c) If a focus of infection becomes arrested auto-inoculations from this focus cease. In Wright's words: "Where an artificial inoculation can no longer be induced in a focus which previously could be influenced we are entitled to conclude that the focus of infection is extinct." Therefore, some of the early cases of pulmonary tuberculosis, many of whom had lost expectoration and tubercle bacilli, who were doing the hardest possible work without rise of temperature or discomfort, might be expected to afford evidence in their blood

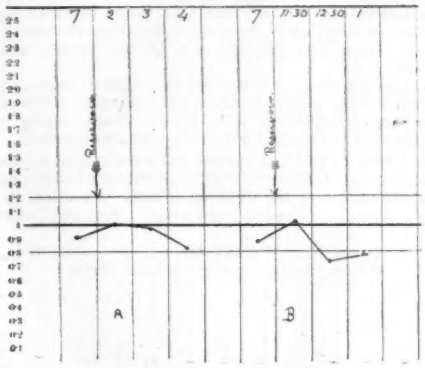
CHART 10.



that their focus of infection was no longer aglow but arrested. The following results were obtained from patients constructing a water reservoir (full navvy work).

CASE 1 (Chart 11, A).—The patient was a male, aged 24 years, a brass finisher. Diagnosis, chronic pulmonary tuberculosis. Infiltration and fibrosis of the right upper lobe. Duration, 18 months. Mode of onset, hæmoptysis. Sputum,

CHART 11.



tubercle bacilli present. Highest known weight, 12 stones 2 pounds. The patient was able to do full work; lost sputum and tubercle bacilli. The temperature was normal. The weight on discharge was 12 stones 10 pounds.

CASE 2 (Chart 11, B).—The patient was a male, aged 23 years, a warehouse salesman. Diagnosis, early pulmonary tuberculosis. Extent, infiltration of the left upper lobe. Duration, three months. Highest known weight, 9 stones 10 pounds. Onset, insidious (hæmoptysis +). Sputum, tubercle bacilli present. The patient was able to do hardest work. Temperature normal. Weight on discharge 9 stones 12 pounds. He lost expectoration and tubercle bacilli, though slight cough persisted.

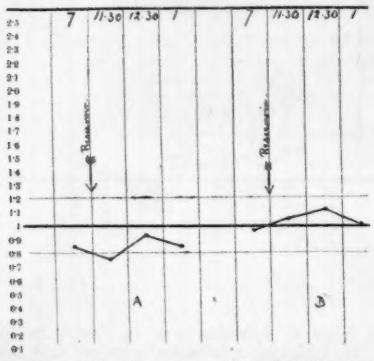
CASE 3 (Chart 12, A).—The patient was a male, aged 26 years, clerk. Diagnosis, chronic pulmonary tuberculosis. Extent, right upper lobe, infiltration; left upper lobe, infiltration. Duration, nine months. Onset, hæmoptysis. Sputum, tubercle bacilli present. The patient was able to do hardest work. Temperature occasionally 99° F. Weight on discharge, 10 stones 12 pounds. Lost cough, expectoration, and tubercle bacilli.

CASE 4 (Chart 12, B).—The patient was a male, aged 25 years, an iron-moulder. Diagnosis, chronic pulmonary tuberculosis. Extent, infiltration and fibrosis of the right upper lobe. Duration, 12 months. Onset, pleurisy (nine years ago). Sputum, tubercle bacilli present. Highest known weight, 9 stones 12 pounds. The patient was able to

do hardest possible work. Temperature normal. Weight on discharge 10 stones 5 pounds. Lost expectoration and tubercle bacilli.

All these cases showed a return of the opsonic index to the normal, although the patient was doing the hardest of work. Therefore, the clinical opinion that the disease was arrested is confirmed by a precise scientific observation. These

CHART 12.

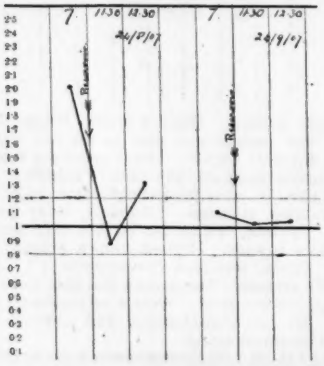


curves again negative the supposition that the high index noted in earlier stages might be due simply to increased general fitness of the body due to sanatorium life, since cases doing best of all and about to be discharged as showing "total arrest" gave an index no longer above the normal but within normal limits. The stimulus had been removed and the body was no longer called upon to elaborate protective substances; while if the high index in these cases had been caused solely by generally improved health it ought to have persisted so long as the robust health continued.

Two cases may be added in which the progress from a high tuberculo-opsonic index produced by graduated artificially induced auto-inoculations to a normal index during the performance of the hardest work was actually observed.

CASE 1 (Chart 13).—The patient was a male, aged 26 years, a shop assistant. Diagnosis, chronic pulmonary tuberculosis. Extent, infiltration of the right upper lobe. Duration, three months. Onset, "influenza" and cough. Sputum, tubercle

CHART 13.

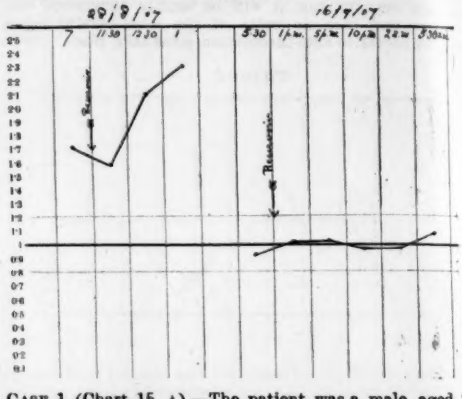


bacilli present. Highest known weight 10 stones 15 ounces. Able to do hardest work. The patient lost expectoration and tubercle bacilli. Temperature normal. Weight on discharge 10 stones 3 pounds.

CASE 2 (Chart 14).—The patient was a male, aged 32 years, a tin-worker. Diagnosis, chronic pulmonary tuberculosis. Extent: right upper lobe, infiltration; left upper lobe, infiltration. Duration, 11 months. Onset, pleurisy. Sputum, tubercle bacilli present.

(*d*) There are cases which give a normal index before and after the hardest exercise, and yet have not lost all expectoration or tubercle bacilli in the sputum. The patients were without fever, were apparently in robust health, were doing full navvy work, and showed physical signs of arrest, but in the early morning occasionally expectorated a little sputum which contained a few tubercle bacilli (two or three on a slide). (Cf. Dr. J. K. Fowler's case quoted in his book on "Diseases of the Lung," Fowler and Godlee, 1898, Ch. 34, p. 369).

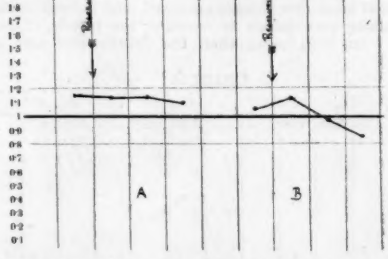
CHART 14.



CASE 1 (Chart 15, A).—The patient was a male, aged 39 years, a butler. Diagnosis, chronic pulmonary tuberculosis. Right lung: upper lobe, infiltration; lower lobe, infiltration. Left lung: upper lobe, infiltration. Duration, pleurisy four years before. Onset, cough six months. Sputum, tubercle bacilli present.

CASE 2 (Chart 15, B).—The patient was a man, aged 26 years, a compositor. Diagnosis, chronic pulmonary tuberculosis. Extent, infiltration of the left upper and lower

CHART 15.



lobes. Duration, 16 months. Onset, hæmoptysis. Sputum, tubercle bacilli present. Highest known weight, 7 stones 7 pounds. The patient was able to do hard work. Moist sounds in the lung disappeared. Temperature normal. Weight on discharge, 8 stones 2 pounds 12 ounces. Scanty expectoration in the early morning which still contained tubercle bacilli.

The practical outcome of these investigations is this. The labour scheme so ably devised and carried out by Dr. Paterson has been submitted to a new scientific test by means of which its effect on the blood of the patients has been traced. The opsonic index has shown that the exercise has supplied the stimulus needed to induce artificial auto-inoculation, and that its systematic graduation has regulated this in point of time and amount. This coöperation with the natural efforts of the blood has enabled Dr. Paterson to send his patients back to their accustomed work, however hard it may be. But the investigation has done more than explain a successful mode of treatment. Dr. Paterson agrees with me that with the aid of the opsonic index he can regulate the stimulus with scientific accuracy and obtain his results more certainly and more rapidly. This, of course, involves work in the laboratory. But it also means a more rapid and a more certain discharge of the

patient, which is the main object of the sanatorium, and as a consequence of this the power to treat a larger number of patients. I may be permitted to conclude by expressing my thanks to the staff of the Brompton Hospital for their permission to publish the cases under their care and for their continuous encouragement and useful advice during the whole of my work.

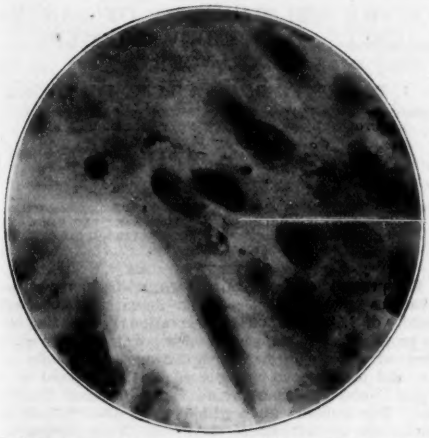
Brompton Consumption Hospital, Fulham-road, S.W.

NOTE ON THE PRESENCE AND SIGNIFICANCE OF CERTAIN ROD-SHAPED BODIES IN THE CELLS OF CARCINOMATOUS TUMOURS.

BY W. FORD ROBERTSON, M.D. EDIN.,
PATHOLOGIST TO THE SCOTTISH ASYLUMS.

IN the course of investigations, of which some of the results have already been described,[1] I had occasion to stain sections of a carcinoma of the breast by the palladium methyl violet method, a staining process that has long been employed for nervous tissues in the laboratory of the Scottish asylums. The preparations obtained, besides serving for the purpose intended, revealed in the protoplasm of very many of the epithelial cells one or more rod-shaped bodies somewhat resembling tubercle bacilli. I have since applied the method to 36 tumours of various kinds and have found that similar rod-shaped bodies are constantly present in certain forms of carcinoma. I have observed them in all of ten carcinomata of the breast, in all of ten squamous epitheliomata, in both of two malignant adenomata of the sigmoid flexure, in a secondary cancer of the liver, in a cancer of the prostate, in a secondary cancerous growth in the dura mater, and in a tumour of the choroid composed of large epithelial cells. I have been unable to detect them in five adenomata of the breast, an adenoma of the cervix uteri, a papilloma, a uterine fibroid, a glioma of the brain, and a spindle-celled sarcoma, as well as in normal squamous epithelium, a mammary gland from a case of puerperal insanity, in a case of chronic mastitis, and in brain tissue.

FIG. 1.

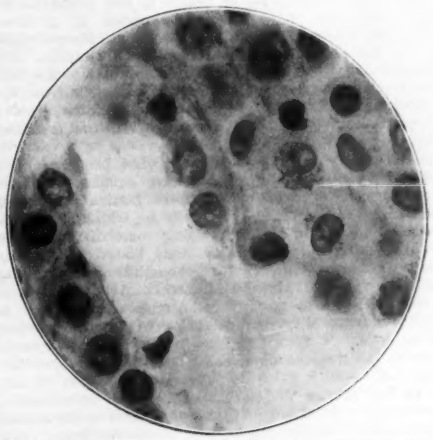


Section of a carcinoma of the breast showing three rods in protoplasm of epithelial cells. Palladium methyl violet method. × 800. The white line indicates the group of rods.

Whilst the most typical form of these bodies is that of a straight or slightly curved rod, closely resembling the tubercle bacillus (about 3μ in length and 0·3μ in thickness), much smaller and also much larger forms may frequently be observed in sections in which the bodies in question happen to be numerous. The smaller and medium-sized varieties usually stain evenly of a reddish-violet tint but the larger forms are generally distinctly granular in appearance and may sometimes present one or more pale or colourless transverse bars. The edges are always smooth. The ends are generally blunt and there is no evidence of the presence of flagella. These rods are not stained by Gram's method. In sections stained by the Ziehl-Neelsen method for tubercle bacilli they are invisible. In sections stained with carbol thionin or methylene blue only some of the larger forms can be detected as faintly stained bodies, generally lying in a ground work of the same tint. The rods are most commonly to be seen in the protoplasm of the epithelial cells and they are to be found in largest numbers in the most rapidly growing parts of the tumour (Fig. 1). In the most successful preparations they appear as reddish-violet bodies lying in a pale yellow protoplasm. They are also very commonly, though less frequently, to be observed in the nuclei of the epithelial cells. Regarding their occurrence outside these cells little can be said, because the special staining method also colours the elastic fibres which are generally abundant in these tumours and which, especially if fragmented, cannot be distinguished absolutely from rods similar to those that occur in the protoplasm of the cells. In some special preparations in which elastic fibres have not complicated the picture the rods have appeared to be almost exclusively intracellular.

In five carcinomata of the breast I have found these intracellular rods to be present in very large numbers. In some preparations a hundred or more may readily be counted in a single field under an oil immersion lens. Single epithelial cells may occasionally be observed with from 20 to 30, or even a larger number, lying in their protoplasm (Fig. 2). In five other carcinomata of the breast in

FIG. 2.



Section of a carcinoma of the breast showing numerous rods in the protoplasm of an epithelial cell. Palladium methyl violet method. × 800. The white line indicates the group of rods.

which these rods have been detected they appear to be present in comparatively small numbers. I have found them to be numerous in only three squamous epitheliomata; in seven other tumours of this kind in which they have been clearly recognised they occur only occasionally. They have likewise been observed only in small numbers in the other carcinomatous tumours in which they have been detected.

So far as I have been able to ascertain attention has not previously been directed to these peculiar bodies, either by those who have described parasites in carcinomatous tumours or by others. The evidence which can be adduced in support of the view that they are parasitic in nature is, I think, conclusive. They present features which prove them to be growing organisms and they have been cultivated in an artificial medium. The possibility of their being bacilli can be excluded at once. It can be shown that they arise from comparatively large rounded bodies which are certainly not bacterial organisms. It is further to be noted that they have not the characters of the spirochæta microgyrata which has been described as occurring in carcinomata of the mouse.

My observations lead me to conclude that these rod-shaped

[1] THE LANCET, August 10th, 1907, p. 358.

bodies represent a stage in the life cycle of the protozoan organisms described by Dr. Henry Wade and myself as occurring in certain carcinomatous tumours. We had previously observed such rods in the old silver-gold preparations but never in large numbers, and we were unable to attach any significance to them. In sections prepared by the improved ammonia-silver process and decolourised by cyanide these rod-shaped bodies tend to retain the black deposit for a short period subsequent to their development; at a later stage they are much more readily bleached by the cyanide. These preparations reveal in the protoplasm of many of the epithelial cells, especially in carcinatoma of the breast, more or less numerous spherical or oval bodies which were described in previous papers, and from these bodies the rods can be seen to originate. In palladium methyl violet preparations these globular bodies can also be recognised, often appearing distinctly nucleated, and various stages in their transformation into rods can easily be observed. The evidence of the histological preparations upon this point is confirmed by that derived from an agar culture from a secondarily infected gland in a case of malignant adenoma of the intestine, described by Dr. Wade and myself. This culture contains in the substance of the agar numerous spherical bodies with the staining reactions of those demonstrable in the protoplasm of some carcinoma cells, and the study of preparations of this culture stained by the methyl violet method has revealed the fact that these spheres become transformed into rod-like bodies identical with those that can be seen in the tissues. In a future paper I hope to deal fully with the subject of the life cycle of these protozoan organisms. If these rods represent merely a single phase in a complicated life cycle, it should be easy to understand how in many carcinomatous tumours they can be found only in small numbers whilst in other tumours of the same kind they are abundant. It seems to me probable from evidence collected that not one species of protozoan organism but several closely allied species are the pathogenic agents in the production of carcinomatous tumours. It at least appears that the forms found in carcinoma of the breast present certain characters which distinguish them from those that may be observed in squamous epitheliomata and in intestinal tumours, although the life cycles are essentially the same.

I have endeavoured to ascertain what becomes of the rods, but as yet only a few facts have come to light. At first it seemed probable that these bodies are motile forms which escape from the cell in which they have originated and which, after travelling some distance, infect other cells, but this hypothesis on being tested has failed to obtain any confirmation. The evidence, indeed, very strongly supports the view that the rods, instead of tending to escape from the cell, seek to penetrate the nuclear membrane and that they undergo a further evolution within the substance of the nucleus. Not only may the rods frequently be seen to abut upon the nuclear membrane, but they may sometimes be observed to have partially penetrated it, either by movement or by means of end-growth. The occurrence of characteristic rods wholly within a nucleus is quite common and occasionally several may be seen in one nucleus.

In conclusion, I would say that if pathologists will apply the palladium methyl violet method to a few properly fixed and somewhat recently obtained carcinomata of the breast and squamous epitheliomata, I am confident that they will quickly be able to confirm and to extend these observations which I have here briefly recorded. I have to express my indebtedness to Mr. F. M. Caird, Mr. David Wallace, and Dr. M. B. Hannay for most of the tissues used in these investigations.

APPENDIX.

The palladium methyl violet method.—The reagents required are saturated solution of palladium chloride in 1 per cent. citric acid in water, 1 per cent. solution of methyl violet 6 B or 5 B, saturated solution of iodine in 2·5 per cent. potassium iodide, equal parts of turpentine and benzole, equal parts of pure anhydrous aniline oil and benzole, benzole and benzole balsam. The tissues should be fixed in 5 per cent. formalin in ¾ per cent. salt solution (and preserved in the same fluid or in alcohol), or for 24 hours in Heidenhain's sublimate solution, with subsequent removal of the mercury by means of iodine in the usual way. Cut thin sections by the dextrine freezing method. Place the sections overnight in the palladium solution. Wash them in three changes of water and then place them for from 10 to 20 minutes in the methyl violet stain. Wash the sections shortly in water and transfer them to the iodine solution, in which they should remain for from 10 to 20 minutes. Next transfer the sections to a bowl of water. In this they may be left for an hour or longer without suffering harm. Steel needles must not be used in these operations. Take a section up from the water upon a perfectly clean slide. Carefully remove water from around it by means of a towel. Next lay the slide upon the table and with a piece of smooth blotting or filter paper (folded double) blot the section in the same manner as one dries a sheet of wet manuscript. Immediately afterwards, without allowing it to dry completely in air, pour over the section some drops of a mixture of equal parts of turpentine and benzole. Renew this turpentine-benzole after a few seconds and then place the slide upon the heater (described below), where it must remain at a temperature of about 60° C. until completely dehydrated. If the turpentine-benzole tends to evaporate off the section add more by means of a pipette. When dehydration is complete the previously black and opaque tissue assumes a dark blue and faintly translucent appearance. Generally from 15 to 20 minutes are required. When the section seems dehydrated remove the slide from the heater, allow it to cool, and then pour off the turpentine-benzole. Decolourise with aniline-benzole. Renew this two or three times. Avoid breathing on the slide as the smallest trace of moisture in the aniline-benzole will cause complete decolourisation of the section. When the dye ceases to come away wash the section in several changes of pure benzole and mount in balsam in benzole. It is essential that the section should be completely dehydrated on the heater. Any spot in which moisture has been allowed to remain will be decolourised by the aniline-benzole. A heating apparatus of a very simple form is sufficient for the purposes of this method. I use a small spirit lamp placed below a tripod stand, on the top of which there is a thin metal plate, and upon this again two small iron bars laid parallel to each other and at such a distance as just to allow the two ends of a microscopic slide to rest upon them. By such an arrangement heat is transmitted only by the two ends of the slide and the turpentine benzole is driven to the centre. Tissues that have been in alcohol or in formalin for over two years do not, as a rule, stain deeply enough, and must then be regarded as unsuitable for the application of this method.

ON THE RELATIONSHIP OF CANCER CELLS TO THE DEVELOPMENT OF CANCER.

BY J. E. SALVIN-MOORE, A.R.C.S., F.L.S., F.Z.S.,
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AND

C. E. WALKER,
ASSISTANT DIRECTOR OF THE CANCER RESEARCH LABORATORIES, UNIVERSITY OF LIVERPOOL; AND HONORARY LECTURER IN CYTOLOGY IN THE LIVERPOOL SCHOOL OF TROPICAL MEDICINE.

IN the present communication we wish to record some observations made in the Cancer Research Laboratories, University of Liverpool. The observations in question relate to the propagation of cancer in mice. The tumours utilised are derived from a growth originating sporadically in a mouse, and most generously placed at the disposal of the Liverpool Cancer Research Committee by Professor Ehrlich of Berlin. The tumours upon which these observations have been made are of exceptional virulence. They are graftable from one mouse to another—that is to say, if small fragments of the growth be removed from an animal these fragments will grow when placed under the skin of a healthy individual. So far as can be ascertained from purely cytological examination of the process, the new tumour in inoculated mice appears to proceed directly from the cells belonging to the original tumour which have been mechanically transferred. The grafted tumour, in fact, apparently arises from the implanted cells, and not through any alteration of the tissues of the new host which surround the graft.

For purposes of investigation portions of these tumours were removed from mice and subjected for periods of from

20 minutes to half an hour to the action of liquid air. They were then at once introduced into healthy mice beneath the skin, the presumption being that in these circumstances the tumour cells would be destroyed by the action of the liquid air, and consequently that they would multiply no further. However, among the inoculations made with the frozen material it was found that in some cases new tumours were produced. Further, in a number of mice wherein tumours of the same strain were already growing similar inoculations were made in a remote part of the body; in some of these also the same positive result was obtained. From these observations it is rendered clear that exposure to liquid air at a temperature of about – 195° does not necessarily destroy the potentiality of the substance of a mouse tumour to produce fresh tumours of the same kind in mice into which such frozen tumour substance has been grafted.

These facts in themselves are somewhat surprising, and they immediately raise a number of questions which it will be desirable to have elucidated in the interests of research concerning the nature of cancer. In the first place, it is rendered clear that exposure to liquid air for a certain period of time does not destroy the principle upon which the vitality of mouse cancer depends. If, as may be the case, the cells composing the mass of the tumour, and constituting the grafts, are killed by exposure to liquid air, then the development of mouse cancer after such exposure indicates not merely that the growth of similar tumours is independent of the integrity of the "cancer cells," but also that the new tissues are not necessarily formed from the implanted cells at all, and may arise from the cells of the new host in response to some stimulus introduced along with the frozen material, and quite independent of the integrity of the so-called "cancer cells."

This matter is at present engaging our attention, but the fact that the capacity for originating new growths is not necessarily destroyed in the substance of tumours after exposure to liquid air, certainly suggests that the production of new tumours in the hosts into which the frozen cancer tissue has been introduced may possibly not be dependent upon the introduction of the "cancer cells" at all, but upon the action of a virus which is independent of these cells, and retains its activity after being subjected to the temperature of liquid air. It is well known that a number of bacteria are not killed by this temperature. The fact that cancer can be originated in mice by implantation of portions of frozen tumours may indicate that there exists some such cause as an organised irritant or parasite acting as an agent in the production of cancer. On the other hand, however, it is not yet certain that the cells from the tumour introduced into a new individual are killed by half an hour's exposure to the temperature of liquid air, particularly as the seeds of some plants and trypanosomes are said to survive this temperature.

NOTE UPON THE EFFECT OF LIQUID AIR UPON THE GRAFTABLE CANCER OF MICE.

BY J. E. SALVIN-MOORE, A.R.C.S., F.L.S., F.Z.S.,
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AND
J. O. WAKELIN BARRATT, D.Sc., M.D. LOND., F.R.C.S. ENG.

IN the present communication we wish to record some observations made upon the graftable tumours of mice. The tumours under observation were obtained for the Liverpool Cancer Research Laboratories, through the kindness of Professor Bang of Copenhagen, and were received originally from Professor Jensen. For purposes of certain experiments not yet completed fragments of the tumour in question were placed in liquid air for from 20 minutes to half an hour and after thawing were placed under the skin of fresh mice in the ordinary way. It was presumed that by exposure to the temperature of liquid air the tumour cells would be immediately killed. However, in a number of such grafts after a period of from ten to 20 days fresh tumours appeared at the site of the inoculations.

These observations appear to be of interest in themselves; but more especially so because they lead up to a number of important questions. It seems to be probable from what has been observed in relation to healthy skin that exposure to the temperature in liquid air rapidly kills the cells composing it. It may, of course, be that cancer cells differ in their capacity to resist such a temperature, but at the same time since some bacteria and other organisms are known not to be killed by the temperature in question it is clearly suggested that there may be an organism in or among the cancer cells able to withstand the treatment to which they have been subjected and afterwards consequently capable of setting up the formation of a tumour derived from the tissues of a new host. These are, however, matters which are engaging our attention and at present it is undesirable to say more concerning them.

TREATMENT OF GRAVES'S DISEASE WITH THE MILK OF THYROIDLESS GOATS.

BY WALTER EDMUNDS, M.A., M.C. CANTAB., F.R.C.S. ENG.,
SURGEON TO THE PRINCE OF WALES'S HOSPITAL, TOTTENHAM.

SINCE the discovery of the nature of myxœdema it has been thought that the symptoms of Graves's disease are due to an excessive secretion from the enlarged thyroid gland Further, it has been thought that a remedy might be found in the serum or milk of thyroidless animals, the idea being that to counteract the thyroid secretion the normal body secretes an antithyroidin, and that in thyroidless animals this antithyroidin would be in excess and available to act as an antidote to the excess of thyroid secretion in Graves's disease.

There are, however, some difficulties in the way of this theory. The severity of the symptoms of Graves's disease is by no means always in proportion to the size of the goitre, nor is this always one of the first symptoms; indeed, from the history of the cases it would seem that they often start from some mental strain. Another difficulty arises from the fact that myxœdema and Graves's disease sometimes coexist. Babinski mentions two such cases and Dr. Samuel West has recently recorded a very clear case occurring under his care at St. Bartholomew's Hospital.

A third difficulty arises from the symptoms produced by the excision of the thyroid varying in different animals. In dogs and cats the operation produces severe nervous symptoms, tremors, paralysis, and convulsions, quickly followed by death. In goats, on the other hand, as a rule no ill effects follow. I have recently performed the operation on ten goats. One of them was young and not fully grown; the effect of the operation was that it ceased to grow and became in fact a cretin. The other nine goats were fully grown and in seven of them the operation produced no effect; in the other two there came on after some months a swelling of the face, due no doubt to myxœdema; this was treated with thyroid tabloids and disappeared but both animals died. A small percentage of the dogs submitted to complete thyroidectomy escape the acute symptoms; they then remain well; they do not later develop myxœdema nor does this occur in those dogs in which nearly the whole of the thyroid gland is removed and one or more parathyroids are left. Thus dogs do not have myxœdema and goats do not have the acute nervous symptoms which occur in dogs and which are attributed by Gley and others to the removal of the parathyroid glands. Monkeys, however, which are nearer to man than either dogs or goats, may have aparathyroidea or myxœdema or both. As a rule, it seems that monkeys when submitted to thyroidectomy die from the nerve symptoms; those, however, which survive or escape this may have, and some do have, myxœdema.

Thus, even if it is admitted that the symptoms of Graves's disease are due to the thyroid secretion, the question may not be merely one of too much or too little, but we may have to distinguish between the secretion from the thyroid proper and that from the parathyroids.

A fourth, and last, objection to the theory is that it leaves out of account the possibility of any action of the central nervous system on the secretion of the gland. Exner, and later myself, have shown reason for thinking that there is

such an action; nor is this disproved by the recent and important experiments of Payr. He transplants one lobe from the neck of a dog into its spleen; by a later operation he excises the lobe remaining in the neck—this produces no ill-effect; and by a third operation he removes the spleen with the transplanted thyroid lobe in it—this is followed by the death of the dog. By the aid of the experience gained in these experiments Payr performed an important operation on the human subject. He had under his care a cretinous child, aged six and a half years. The child had been treated by thyroid feeding almost without result. Payr excised part of the thyroid of the child's mother and planted it in the spleen of the child, with the result that the child was greatly improved.

Notwithstanding the foregoing objections it may well be that the enlarged thyroid of Graves's disease does yield an excessive secretion, that this is injurious to the economy, and that these ill-effects may be relieved by the administration of the milk of thyroidless goats, a treatment suggested and practised by Lanz. To this treatment it may be objected that even if the blood serum of the goat contains an antidote this would not pass into the milk, which is a secretion and not a transudate. In this connexion it may be pointed out that if after total thyroidectomy in the dog the removed lobes are simply dropped back into the wound before it is closed the symptoms resulting will be altered; the dog will die, but it will live a few days longer than it otherwise would and it will not have the tremors, paralysis, and convulsions which usually follow the operation, but will die from asthenia. This difference is presumably caused by the absorption of the replaced lobes.

Following these lines I removed from three cats the thyroid gland and fed the cats on ordinary cow's milk. Two of these cats died with the usual symptoms, tremors and paralysis, in four and five days; the third died from asthenia in 15 days. In three other cats the same operation was performed and they were fed subsequently on the milk of a thyroidectomised goat. None of the three had tremors or paralysis; they died from asthenia in 9, 12, and 14 days. The fact that not one of these three cats had the usual symptoms certainly suggests that the goat's milk contained some special constituent.

In a disease like Graves's, in which many of the cases greatly improve under any reasonable treatment, it is not easy to say with confidence that any particular remedy has done good. However, there are several cases on record in which the milk treatment of Lanz seems almost certainly to have been of benefit. Thus Lanz himself gives one case so severe that from his previous experience he expected the patient to die who yet made a good recovery. Other satisfactory cases have been recorded on the continent and one in America.

The first case at the Prince of Wales's Hospital treated in this way was that of a young woman, aged 23 years, under the care of Dr. R. Murray Leslie, to whom I am indebted for permission to refer to the case. The patient was first admitted in August, 1906. She came with a history of having had a month or two previously an attack of rheumatic fever. On admission she was suffering from palpitation, with a pulse of 120, slight prominence of the eyes, and a soft pulsating goitre which gave a blowing sound on auscultation. She improved under rest and medical treatment and went out on Oct. 22nd. Her weight at this time was 7 stones 5 pounds. After her return home she became worse and was readmitted to the hospital on Jan. 3rd, 1907. Her weight was now 6 stones 10 pounds. She had marked exophthalmos so severe that she could not completely close her eyes. The thyroid gland was greatly enlarged with a loud systolic murmur over it; there was also a systolic murmur at the heart's apex. The pulse was 120. There were marked tremors of the hands. The patient was at first placed on the same treatment as she had done well on before. After a few days she was ordered rodagen, which she took for one month without any benefit. Her weight was now 6 stones 9 pounds. She was then put back on her former medicine and also had some applications of the x rays to the goitre. She did not improve, but lost flesh considerably, her weight on March 26th being 5 stones 12 pounds. She was now given the milk of a thyroidectomised goat, taking for some time the whole of the milk which the goat gave. The patient now gradually and markedly improved. Her weight steadily went up; on May 7th it was 6 stones 11 pounds and on June 18th (shortly before she left) it was 7 stones 1½ pounds. Besides this she felt, and obviously was, much better and stronger; the goitre and exophthalmos were somewhat less and the pulse-rate was about 105.

The second case was not in the hospital but occurred in the practice of a medical friend. The patient, a married woman, aged 48 years, was first seen in April, 1907. She complained of palpitation, of feeling weak, and of loss of flesh. Her weight, formerly 11 stones, was now 9 stones. The eyeballs were prominent and there was slight thyroid enlargement. The pulse was 120. She was treated with bromide, belladonna, digitalis, and arsenic without any good result. On June 18th she was kept in bed and Leiter's tubes were applied to the goitre. The pulse was 120. On July 9th she began to take milk from thyroidectomised goats. She gradually improved. On the 26th she began to get up. On August 17th the pulse was 84. On Oct. 17th she had continued to improve, her weight was 8 stones 4½ pounds, and the pulse was 80. She was still taking a small quantity of the milk (the yield of the goats was at this time diminishing). On Dec. 14th her weight was 8 stones 12 pounds and the pulse was 84. She ate and slept well. There was very little palpitation. She could do a little light household work. While taking the milk the only medicine given was bicarbonate of sodium and gentian.

A third case was also under the private care of a friend. The patient was a woman, aged 26 years. About nine years ago she developed unilateral proptosis without any other symptom. She had had two severe attacks of influenza, the last two years ago. After the second attack she had a cerebral seizure, falling and becoming momentarily unconscious. This was followed for a time by convulsive movements of the left arm, which were worse during sleep; this slowly passed off. About a year ago the patient one night felt a pain in her throat and on putting her hand up to her neck found a swelling which proved to be a goitre. After this the second eye became also prominent. Besides this she had slight choking attacks at night and was very restless in her sleep. She was treated for several weeks with drachm doses of rodagen twice a day; this did not produce the slightest improvement. On July 25th she commenced taking about one and a half pints of the milk of a thyroidectomised goat a day. There has been no material change in the pulse-rate, which has usually been under 100, or in the weight, which has been fairly steady at about 8 stones 12 pounds. But there has been considerable improvement in her general condition, as shown by her subjective sensations and the observations of her friends; also the attacks of palpitation to which she was subject have become less frequent. The exophthalmos, which was throughout slight, has not altered.

There is no great difficulty in carrying out this treatment, especially in the country. Goats take ether well; the thyroid gland in them consists of two separate lobes lying one on each side of the trachea; there is no isthmus. As far as my experience goes it is best to choose an animal two or three years old and to operate about three or four weeks after kidding. Goats as a rule have their young in the spring.

That others may be induced to try this treatment this year is my reason for what I fear may seem to be a premature publication of results.

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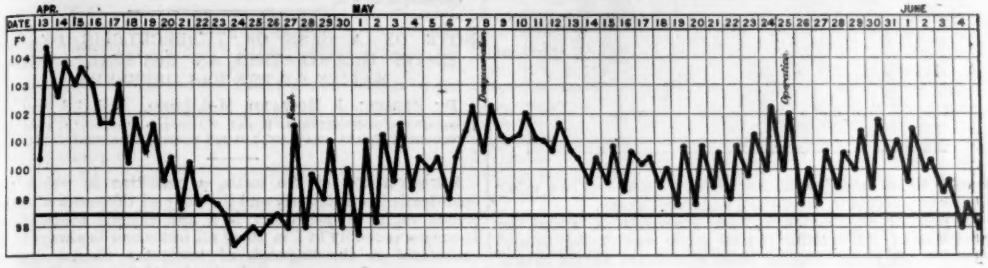
Devonshire-place, W.

A CASE OF ACUTE SUPPURATION IN A THYROID ADENOMA DUE TO THE BACILLUS TYPHOSUS.

BY F. G. MELANDRI, M.D. BOLOGNA,
PHYSICIAN TO THE ITALIAN HOSPITAL, QUEEN-SQUARE, LONDON;
AND
T. P. LEGG, M.S. LOND., F.R.C.S. ENG.,
ASSISTANT SURGEON TO THE ROYAL FREE HOSPITAL, GRAY'S INN ROAD, LONDON, AND TO THE ITALIAN HOSPITAL.

THE patient, an Italian, aged 26 years, was admitted to the Italian Hospital on April 13th, 1907. His illness dated from four days previously. His pulse-rate was 116, the respirations were 36 per minute, and there were signs in the chest of acute pneumonia. On the 21st, the twelfth day of illness, the temperature came down to normal but the

general condition of the patient did not improve. There was great prostration and frequent vomiting, the vomit consisting first of thin yellow and later of dark green material. The tongue and mouth were in a very foul condition. This state lasted for six days. On the 27th the temperature again rose to 101·6° F. and the pulse to 136 per minute. A generalised erythematous rash, accompanied by severe sore-throat, appeared and persisted for three and a half days. A diagnosis of scarlet fever was made and the patient was isolated. He had some diarrhœa but there was nothing noteworthy in the stools. From the 27th to May 3rd the temperature was intermittent. Nothing abnormal was detected in the chest and a gradual improvement in the general condition followed, the vomiting ceasing and the tongue becoming clear. The urine had constantly contained albumin. On the 8th desquamation began and during the next fortnight the temperature remained considerably elevated (see chart).



About May 20th or 21st the patient first complained of pain in the neck and a tender swelling was discovered in the region of the right lobe of the thyroid. The patient then told us that he had known of the existence of a swelling in this situation for some years but that it had not caused any symptoms. By the 24th the tumour had rapidly increased in size and was exceedingly tender. It moved up and down on swallowing but did not cause any dyspnœa or dysphagia. The swelling occupied the greater part of the right lobe of the thyroid; it was globular in shape, very elastic, but not definitely fluctuating. The left lobe was normal and the trachea was displaced to the left side of the mid-line. The temperature, which had continued to be intermittent, rose on the evening of the 24th to 102·2°. A diagnosis of suppuration in a thyroid adenoma was made.

On May 25th a transverse incision was made over the lower part of the swelling. The infrahyoid muscles were found to be œdematous and adherent to the swelling; they were divided and then peeled off its surface. An attempt was made to enucleate the tumour, but in doing so it was ruptured and two ounces of pus were evacuated. A couple of drainage-tubes were placed in the cavity, one of them being brought out at the posterior border of the sterno-mastoid through a separate incision and the other one through the middle of the incision, which was only partially closed by two or three stitches, the rest being packed with gauze. The tubes were left out on the 29th. By June 17th the incision had quite healed, and all pain, swelling, and tenderness had disappeared. For a week after the operation, in spite of the local condition being quite satisfactory and of there being no evidence of insufficient drainage, the temperature remained constantly above normal. The pulse-rate was about 100, and the respirations were 24 per minute. On June 4th the temperature came down to normal permanently and convalescence was thereafter uninterrupted.

Films made from the pus at the time of the operation showed that the cells were nearly all polynuclears, and very few organisms were seen. Cultures, however, gave a copious and pure growth of a non-Gram-staining motile bacillus, which on further chemical examination gave the fermentation and other reactions of the typhoid bacillus in a typical manner. The bacilli were readily clumped by a human and animal typhoid serum in high dilutions. The patient's own serum with a 1 in 50 dilution gave a positive Widal's reaction on two separate occasions at a week's interval. There can be no doubt that this was a case of suppuration in a thyroid adenoma due to the typhoid bacillus.

The interesting point is, from what source did the organisms reach the gland? As already described, the illness was by no means of the ordinary typhoid type, and after the bacilli had been found we carefully examined the abdomen for enlargement of the spleen but failed to detect it or any other abnormal condition suggesting typhoid fever. The stools did not at any time have the characters of those of a typhoid patient. Moreover, the patient made such a rapid recovery that he was able to leave the hospital on June 22nd. We questioned him as to his having had typhoid fever in the past, but we were unable to satisfy ourselves on this point.

We have thought this case to be worth publishing because an acute abscess in the thyroid, though a well-recognised condition, is not of very common occurrence, and when it does occur, apart from traumatism, such as puncturing a cyst, is most often observed in connexion with an acute febrile disease and generally at a late stage of the illness. Typhoid fever is one of the commoner of such diseases to be followed by an acute thyroiditis and usually the abscess is a late complication. In this patient the signs developed at the end of the sixth week from the beginning of the illness. As soon as suppuration has occurred the pus should be evacuated, or if the abscess has developed in an encapsuled tumour enucleation should, if possible, be performed. If left, the pus is very likely to penetrate the gland capsule, leading to diffuse cellulitis of the neck and mediastinum or to burst into the trachea or pharynx. Whichever of these events occurs the result is likely to be very disastrous. And free drainage must be provided at the time the pus is let out. The incision should not be closely sutured; if a transverse incision is made the scar is very little noticeable. In this patient it is a thin curved line.

We are indebted to Dr. W. d'Este Emery for kindly undertaking the pathological investigation.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF FENESTRATION OF THE ANTERIOR PILLARS OF THE FAUCES.

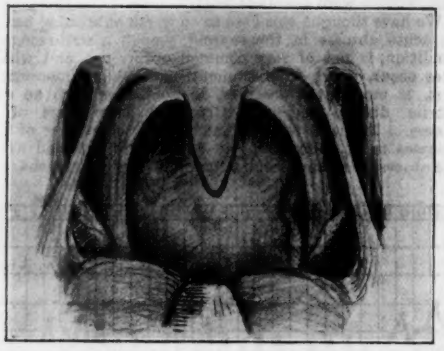
BY P. WATSON WILLIAMS, M.D. LOND.,

LECTURER ON DISEASES OF THE NOSE AND THROAT, UNIVERSITY COLLEGE, BRISTOL; LARYNGOLOGIST AND RHINOLOGIST, BRISTOL ROYAL INFIRMARY; AND CONSULTING SURGEON FOR DISEASES OF THE EAR, NOSE, AND THROAT, PONTYPOOL HOSPITAL.

THE exact mode of origin of this peculiar condition is a disputed point. Some of the cases recorded were considered to be congenital, in others it is believed to be caused by ulceration due to scarlet fever. I consider that this case looks like a congenital defect on account of (1) the absence of any cicatrices or unevenness in the margins of the fenestræ; (2) the bilateral symmetry of the malformation; (3) the arrangement of the strands of mucous membrane and the muscle fibres, and that they obviously correspond to the anterior pillars of the fauces, as shown in the drawing; and (4) the fact that although the posterior faucial pillars do not show fenestration yet the palato-pharyngeus muscles are collected into a separate bundle of fibres on each side, with only a thin layer of mucous membrane in continuity with the lateral walls of the pharynx. Thus, in front the palato-glossus muscle forms a separate bundle, passing down to the tongue, and forms the inner boundary of a

fenestra on each side, while the palato-pharyngeus forms the inner boundary of a thin web of mucous membrane.

The patient, a male, aged 18½ years, had never suffered from sore-throat since he was two years old, at which time he had scarlet fever with a "bad throat." When I saw him there were no symptoms whatever, and the voice did not



appear to be modified in any way. There was no other defect observable in the throat, nose, eye, or ear.

A possible explanation of these fenestrations is that the condition of the anterior faucial pillar was similar to that shown in the posterior pillar until scarlatinal angina caused the thin web of mucous membrane to ulcerate, leaving the strands of palato-glossus muscle seen in later life.

The illustration has been drawn with great care and I think that it very accurately represents the existing conditions. A similar case was illustrated by Fullerton,[1] who refers to other recorded instances.

Description of the illustration.—The anterior pillars of the fauces which contracted well on stimulation and on phonation are seen to be strands of muscle fibre passing down to join the tongue and are covered with normal mucous membrane, forming the inner boundary of a fenestra on either side.

The posterior pillars show indication of a separate bundle of muscle united to the lateral pharyngeal walls by thin mucous membrane. The tonsils are small but lie between the anterior and posterior pillars, and small remains of the plica tonsillaris are present. A small mass of adenoid tissue lies behind the left posterior faucial pillar.

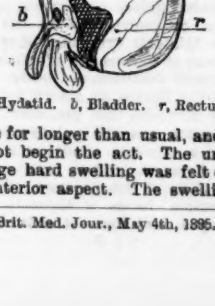
Bristol.

NOTE ON A CASE OF HYDATID CYST IN THE PELVIC CAVITY.

BY P. CLENNELL FENWICK, M.B.LOND., F.R.C.S.EDIN.,
HONORARY SURGEON TO CHRISTCHURCH HOSPITAL, NEW ZEALAND.

HYDATID disease is so frequently seen in this colony that little notice is taken of its occurrence in the lung, liver, or brain. I have recently had a case of a cyst almost filling the pelvic cavity and causing partial retention of urine which may be of interest to surgeons who specialise in urinary disease.

The patient, a man, aged 27 years, was admitted into Christchurch Hospital complaining of pain in the lower part of the abdomen and difficulty in passing urine. He stated that for the last seven years he had had attacks of pain in the right iliac fossa, but during the last three weeks the pain had occurred all over the abdomen. The pain ran down into the right testicle and was severe enough to make him perspire profusely. Micturition was normal except when



h, Hydatid. *b*, Bladder. *r*, Rectum.

he had held urine for longer than usual, and then he found that he could not begin the act. The urine was normal. Per rectum a large hard swelling was felt extending up the rectum on the anterior aspect. The swelling was adherent to the rectum. Anteriorly there was a large firm swelling of the size of an orange situated to the left of the middle line reaching from the pubes to within one inch of the umbilicus. It was fixed and did not fluctuate.

I opened the abdomen in the middle line below the umbilicus and immediately exposed the tumour. The apex was a small knob of the size of a walnut. On examining further the mass could be traced downward into the pelvis and was found closely adherent to the rectum. There was no adhesion to the bladder. I passed a needle into the apex of the tumour and drew off hydatid fluid. The tumour was then opened and a great quantity of large and small cysts were evacuated. When filled with fluid from the douche the empty sac held 250 grammes. I drained the sac and fixed it to the abdominal wall.

The patient has had no difficulty in micturition and has now left the hospital in good health.

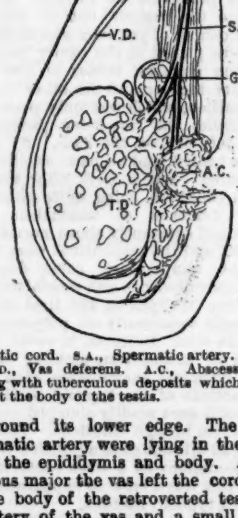
Christchurch, N.Z.

[1] Brit. Med. Jour., May 4th, 1895.

NOTE ON A CASE OF TUBERCULOSIS OF THE TESTIS ILLUSTRATING AN UNUSUAL ABNORMALITY OF THE VAS DEFERENS.

BY RUSSELL J. HOWARD, M.S.LOND., F.R.C.S.ENG.,
SURGEON TO OUT-PATIENTS, ROYAL WATERLOO HOSPITAL; ASSISTANT DEMONSTRATOR OF ANATOMY, LONDON HOSPITAL MEDICAL COLLEGE.

RETROVERSION of the testis, a condition in which the epididymis lies anteriorly and the body of the testis with the tunica vaginalis posteriorly, is a not unusual abnormality. It occurs probably in 1 in 20 of all testes and is always to be considered in the diagnosis of testicular disease and in operations upon the genital gland. If this condition be present, the testicle, in a case of vaginal hydrocele, will lie in the front of the fluid and directly under the place usually selected for tapping. Unless the exact position of the testis has been ascertained by the translucent test the trocar may be plunged directly into the gland. In tuberculous epididymitis the hard nodular swelling of epididymitis is found in front of the soft elastic body of the testis and the diagnosis of the disease is obscured unless the condition of retroversion is recognised. In the majority of cases of retroversion of the testis the vas deferens passes down in the tissues of the cord to enter the globus minor of the epididymis in the usual way, and will be the most anterior structure in the scrotum. In the case to be described the testis was retroverted with the epididymis in front, but the vas passed down *behind* the body of the testis



S.C., Spermatic cord. S.A., Spermatic artery. G.M., Globus major. V.D., Vas deferens. A.C., Abscess cavity communicating with tuberculous deposits which may be seen throughout the body of the testis.

and curled round its lower edge. The spermatic cord and the spermatic artery were lying in their usual position in relation to the epididymis and body. About two inches above the globus major the vas left the cord and passed over the *back* of the body of the retroverted testis accompanied only by the artery of the vas and a small plexus of veins. At the lower pole of the testis the vas passed *forwards* to end the globus minor of the epididymis.

The case was of interest on account of the unusual physical signs presented. The patient was 51 years of age, and had suffered from caries of the spine when he was 32 years old. Twelve weeks before he was admitted into the London Hospital (under the care of Mr. F. S. Eve) the left testis had become swollen and painful. Nine weeks after the swelling first appeared a soft red spot was discovered in the *front* of the scrotum which enlarged and eventually burst, discharging pus. On examination in hospital there was an abscess with a sinus in the anterior wall of the scrotum. Behind the abscess a hard nodular mass was felt which later was found to be the tuberculous epididymis and behind that a soft globular structure which was the body of the testis. The vas could be felt in the spermatic cord; it was not beaded. On examination by the rectum the left vesicula was found to be swollen and hard.

Orchidectomy was performed 12 weeks after the first symptoms and as much of the vas as possible was removed. The epididymis was quite destroyed by tuberculous deposits and many nodules of tubercle were scattered through the body of the testis. The abscess cavity opened into the globus major of the epididymis. The wound healed by the first intention.

I am indebted to Mr. Eve for kindly allowing me to publish the case.

Weymouth-street, W.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

OBSTETRICAL AND GYNÆCOLOGICAL SECTION.

Enucleation of a Uterine Fibro-myoma during the Seventh Month of Pregnancy.—Hæmorrhage into the Pons Varolii as the Immediate Cause of Death in the Eclampsia of Pregnancy.—Exhibition of Specimens.

A MEETING of this section was held on Jan. 9th, Dr. HERBERT R. SPENCER, the President, being in the chair.

Dr. HERBERT WILLIAMSON read a short communication on a case of Enucleation, during the seventh month of pregnancy, of a Uterine Fibro-myoma weighing 17½ pounds, which was followed by premature labour two days later. The patient was a primigravida, aged 32 years. When four months pregnant she suffered from repeated attacks of acute abdominal pain and became emaciated with some fever, and the distension of the abdomen was so great that she was unable to lie down in bed. At the time of the operation the tumour, which could be felt distinct from the gravid uterus, was thought to be a malignant growth of the ovary, but it was found to be a uterine fibro-myoma undergoing necrotic degeneration. The area of attachment of the tumour to the uterus was rather narrow but required enucleation. A premature child was expelled three days later but the patient made an uninterrupted recovery.

Dr. NORMAN C. CARVER and Dr. JOHN S. FAIRBAIRN communicated a case of Hæmorrhage into the Pons Varolii as the Immediate Cause of Death in the Eclampsia of Pregnancy, with illustrative cases. The patient was a primigravida, aged 24 years, who, after exhibiting signs of impending eclampsia, was found unconscious and straightway admitted to hospital. In view of the history of the illness and the presence of œdema and a high degree of albuminuria the case was thought to be one of eclampsia, and as the patient was in a state of deep coma, with Cheyne-Stokes respiration, rapid dilatation of the cervix was done, followed by the extraction of a fœtus of between five and six months' development. The patient died a few hours later and at the necropsy death was found to be due to an extensive hæmorrhage into the pons Varolii. Dr. Carver and Dr. Fairbairn argued that although the immediate cause of death was a pontine hæmorrhage the case was primarily one of eclampsia, and in support of this quoted four recorded cases of a similar nature, in which an unsuspected cerebral hæmorrhage was found post mortem. Details of these cases were given and, from an analysis of the symptoms presented by them and the above case, attention was drawn to such features in them as might serve to arouse a suspicion of the occurrence of apoplexy in the course of an eclamptic attack. These were, briefly, deep coma and cyanosis, with marked respiratory disturbance, occurring in a young patient presenting the urinary and other signs of eclampsia, and they were especially suggestive when the attack was unaccompanied by the usual eclamptic convulsions.—The PRESIDENT thanked Dr. Carver and Dr. Fairbairn for the interesting paper. He had not met with a case of hæmorrhage into the pons Varolii in eclampsia but he could recall two cases of hæmorrhage into the substance of the brain, one observed at a post-mortem examination and the other in which hemiplegia occurred, from which the patient slowly recovered. He thought that apoplexy was a well-known cause of death in eclampsia, and was surprised that Dr. Carver and Dr. Fairbairn had not found more cases recorded, although they did not claim that their paper was exhaustive. In view of the possibility of the occurrence of cerebral hæmorrhage in eclampsia, the intravenous injection of a large quantity of saline fluid would appear to be not unattended with risk.—Dr. MACNAUGHTON-JONES recalled the fact that the "apoplectiform" was one of the old writers' divisions of eclampsia in which sanguineous and serous effusion occurred into the ventricles. The symptoms were such as described in this case. He dwelt on the importance of early anticipation of the eclampsia, especially through the ocular symptoms and signs which were often present, and in which an ophthalmoscopic examination afforded most valuable evidence of the approaching danger. One of the most valuable therapeutical means they possessed to control the increased blood pressure in these cases of threatening cerebral hæmorrhage he believed to be the employment of weak doses of pilocarpine which was also useful in checking the convulsions. If necessary, its full physiological action might be neutralised by $\frac{1}{100}$th of a grain of atropine. He had known eclampsia ending fatally to occur as early as the fourth month of pregnancy.—Mr. A. LIONEL HALL SMITH said he had seen three cases of cerebral hæmorrhage complicating eclampsia or toxæmia of pregnancy, in all of which the diagnosis was confirmed at the necropsy. In one of them the hæmorrhage occurred in association with eclamptic convulsions after delivery, but in the other two the patients were not in labour and had only reached about the thirtieth week of pregnancy.—Dr. AMAND J. M. ROUTH had not had an opportunity of seeing a post-mortem examination of any case dying from puerperal eclampsia where cerebral hæmorrhage had been found, but thought that Dr. Carver and Dr. Fairbairn had shown how often such hæmorrhage might supervene and be the immediate cause of death. He thought it unwise to increase arterial tension, as must have been done in the first case reported, when 10 ounces of blood were removed and 40 ounces of saline infusion injected. This may well have increased the tendency to hæmorrhage. He presumed that saline infusion in these cases was given to dilute the toxins at each given point and to increase the leucocytosis to combat the toxins; but it was doubtful if it should be given when it increased arterial pressure. He considered that the suggestion to give pilocarpine (at all events in the doses usually prescribed—viz., ⅓th grain) was fraught with grave danger. He considered that it should never be given in cases where apoplectic symptoms were present or where there was coma, for he had seen patients under its influence suffocated by the enormous quantity of ropy mucus secreted by their salivary and broncho-pharyngeal glands. He was interested in the fact that epigastric pain had been mentioned as a precursor of eclampsia in some of these cases of albuminuria of pregnancy. He considered this sign, following ocular evidences of high arterial tension, increasing albuminuria, and diminishing excretion of urea, a valuable indication that eclampsia was impending and that steps should be taken to induce labour without needless delay.—Mr. D. C. RAYNER referred to a case of eclampsia under his care in which a fatal termination was due to cerebral hæmorrhage. The patient was in the eighth month of her third pregnancy when convulsions set in. They were frequent and seemed more marked on the right side. The pupils were also noticed to be unequal. The urine contained albumin and the patient was not in labour. Coma deepened and the patient died in a few hours. There was extensive hæmorrhage into the right corpus striatum and optic thalamus.—Dr. R. H. HODGSON said that he thought the lesson to be learnt from this instructive paper was, in al cases of eclampsia in pregnant women empty the uterus He had done so in six cases and in all the women recovered, five very rapidly, and one in whom some sligh convulsions continued for five days was quite well after one

injection of pilocarpine. Emptying the uterus caused the blood to flow to the portal system and thus lessened the danger of cerebral hæmorrhage. He did not understand the object of the saline injection.—Dr. FAIRBAIRN, in reply, said no attempt had been made to make an exhaustive collection of cases of apoplexy as the cause of death in eclampsia, and the cases collected were those of hæmorrhage into the pons or base of the brain without unilateral symptoms to suggest apoplexy. Large cerebral hæmorrhages were not frequent in eclampsia, as was shown by the statistics quoted in the paper. The cases recorded were undoubtedly rare but the possibility of a deeply comatose and cyanosed eclamptic patient having also a cerebral hæmorrhage ought not to be lost sight of, especially in giving a prognosis.

The following specimens were shown:—

Dr. J. P. HEDLEY: (1) Hydrosalpinx with Torsion of the Pedicle; and (2) Double Hæmorrhagic Cysts of the Ovaries.

Mr. HAROLD S. SINGTON: Tumour of the Fœtal Head.

Dr. A. H. N. LEWERS: Cancer of the Cervix (advanced); hysterectomy by Wertheim's method.

MEDICAL SOCIETY OF LONDON.

Graduated Labour in Pulmonary Tuberculosis.—The Opsonic Index in Tuberculous Patients engaged in Physical Exercise.

A MEETING of this society was held on Jan. 13th, Dr. J. KINGSTON FOWLER, the President, being in the chair.

Dr. M. S. PATERSON read a paper on Graduated Labour in Pulmonary Tuberculosis, which is printed at p. 216 of this issue of THE LANCET.

Dr. A. C. INMAN read a paper on the Effect of Exercise on the Opsonic Index of Patients suffering from Pulmonary Tuberculosis; this also is printed in this issue of THE LANCET (p. 220).

The PRESIDENT said that the two papers which they had just heard marked an epoch in the treatment of pulmonary tuberculosis. He contrasted the work done at the Hospital for Consumption and Diseases of the Chest at Brompton 15 to 20 years ago with the work demonstrated by the two papers read that evening, and pointed out the difference between the groping in the dark then and the light which was now shed on pulmonary tuberculosis.

Sir A. E WRIGHT, whilst admitting the possibility of the auto-inoculation method being useful, observed that by employing tuberculin they could begin with minimum doses and increase the amount as required, thus insuring more control than in auto-inoculation.

Dr. C THEODORE WILLIAMS mentioned that when Frimley Sanatorium was opened there was no idea of starting graduated exercises which were begun by Dr. Paterson.

Dr. R. MAGUIRE said that the auto-inoculation treatment must not be applied to every case of pulmonary tuberculosis. Success depended on the careful selection of fit cases for that treatment at the sanatorium; if the method were to be carried out indiscriminately it would soon be found to fail when compared with artificial inoculation.

Dr. F. J. POYNTON emphasised the importance of recognising that there was more in the sanatorium treatment at Frimley than mere auto inoculation. He did not think that the patients whom they had heard about that evening would have done so well as they did on the tuberculin treatment.

Dr. PATERSON, in reply, dwelt on the necessity of discharging patients from the sanatorium ready to return to their usual work without fear of relapse.

Dr. INMAN, in his reply, said that the advantages of sanatorium life were of inestimable value in the treatment of pulmonary tuberculosis. He did not think that the injection of tuberculin would ever replace artificially induced auto-inoculation.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases.—Appendicitis.—The Optic Nerve in Cases of Intracranial Tumour.

A MEETING of this society was held on Jan. 15th, Dr. JAMES RITCHIE, the President, being in the chair.

Dr. ROBERT A. FLEMING showed a case of Spastic Diplegia of Infantile Origin in a man aged 45 years. The tendon reflexes were greatly exaggerated, as was also Baginsky's sign. Athetoid movements were present, chiefly in the left arm which was paralysed. Nearly all the muscles were hypertrophied, including those of the neck; when he spoke there was a marked spasm of the platysma myoides. The patient's intellectual power was good; there was no family history of nervous disease, but one brother stammered greatly; the athetoid movements and spasticity had been present as long as the patient could remember. The lesion must have been either a meningo-encephalitis or a meningeal hæmorrhage.

Mr. J. W. DOWDEN showed a man after operation for Perforated Duodenal Ulcer as illustrating the good results of early complete suture of the abdominal wounds. The ulcer was situated towards the gastric end of the duodenum; it was excised by a longitudinal incision, the cavity of the abdomen was washed out with saline solution, and drainage openings were made at the lower part of the abdomen. On account of the giving way of the sutures the bowels prolapsed two days later; they were replaced and all the abdominal openings were then securely sutured and healed by first intention.

Mr. F. M. CAIRD showed a man after Removal of Half of the Tongue. The operation was done under cocaine, the tongue being snipped out by scissors. No gag was necessary and the man walked back to bed. A few hours after the operation he could articulate perfectly and the wound healed much more satisfactorily than in cases done under a general anæsthetic. All the glands in the front of the neck were subsequently dissected out, and though each was microscopically examined no trace of malignant disease was found in them.

Dr. EDWIN BRAMWELL showed a boy suffering from Poliencephalomyelitis. He had been healthy until three months ago when he felt sick, vomited, and had pain at the back of the neck. On the following day he could not move his head. The movements of the arms and legs were normal, showing that the spinal cord was unaffected, but his head was held stiffly and this was not due to rigidity of the muscles but to excessive weakness of the deep cervical muscles as well as the sternomastoid and trapezius muscles, which were much wasted and exhibited the reaction of degeneration. A general improvement was taking place and the prognosis was favourable.

Mr. H. ALEXIS THOMSON showed a case after Osteoplastic Amputation through the Middle of the Leg, in which a portion of the tibia was retained in the anterior flap and brought into contact with the sawn section.

Dr. D. CHALMERS WATSON showed two cases of Chronic Pancreatitis. He said that the disease was much more common than was supposed. One of the patients had been treated for catarrhal jaundice in August, 1906; on account of the pain a neoplasm at the head of the gall-bladder was diagnosed and an operation was performed. He was now pale, sallow, and emaciated and subject to severe paroxysmal attacks of ague-like severity every six weeks. The second patient had suffered for ten years with indigestion, jaundice, and emaciation.

Mr. DOWDEN read a communication entitled "Deductions from 100 Consecutive Operations for Appendicitis." He confined his statements almost entirely to acute attacks. He said that the appendix was dependent on a single artery as a rule for its blood-supply and was consequently unable to cope satisfactorily with the urgent demands for blood caused by severe inflammation. In his series of 100 operations 82 were acute cases (52 males and 30 females), while the so-called "interval operation" was performed on 14 males and four females. Recurrent attacks were noted in 37 cases. Among the 82 acute cases there were 16 deaths, while among the 18 "interval cases" there were no deaths. A classification of the acute cases according to age showed that 16 cases with six deaths were under 16 years of age; 50 cases with 9 deaths were from 16 to 30 years of age; and 16 cases, with one death, were over 30 years. On the first day of the illness there were 11 operations performed with no death; on the second day there were 16 operations with two deaths; on the third day there were 18 operations with seven deaths; and at later periods there were 37 operations with seven deaths. The symptoms were often treated as those of acute indigestion. It could not be sufficiently emphasised that every attack of so-called acute or subacute indigestion called for a careful local examination, including, if in doubt, a rectal examination. The presence of pain to the left of, and

a little below, the umbilicus might delay a correct diagnosis and had to be borne in mind. In three cases the symptoms so closely simulated perforated gastric ulcer that the duodenum and stomach were explored first and later the appendix. One patient was admitted to hospital as suffering from suppurative arthritis of the hip-joint, while in reality it was a large appendicular abscess extending below Poupart's ligament. If in a first attack an early diagnosis were made and an early operation performed the appendix could be removed through an incision planned to avoid the possibility of a ventral hernia; the acute symptoms rapidly subsided and the patient could be allowed up within a fortnight with the assurance of no subsequent attack. In such cases the prognosis was extremely good; of 14 cases so treated all recovered. If an abscess had developed the prognosis was rendered much more grave. The early local dangers were peritonitis, multiple abscesses, and obstruction, while the early general dangers were pyæmia and septicæmia. Even if the appendix were removed other abscesses might arise as well as fæcal fistula. Many patients were permanently disabled, though their lives had been saved by operation. The proper treatment for this disease was the removal of the appendix at the earliest possible moment. If a surgeon could not be readily obtained morphine should never be administered, but the patient should be put on starvation treatment with enemata of saline fluid for the first 24 hours, with the local application of heat or cold. If a patient recovered from an attack, no matter how mild, he ought to be operated upon. The mortality in interval operations was very small, while if performed within 24 hours in acute cases it might be as low as 0·5 per cent.—Mr. J. M. COTTERILL said that if the case were seen in the country then an operation should be performed at once and at any stage, but in town it was different. An operation performed within 20 hours of the onset was almost absolutely safe; if, however, two or three days had elapsed then it was better to wait and to perform the interval operation.—Dr. J. O. AFFLECK said that he had never been converted to the view that appendicitis was a disease only to be considered by the surgeon. He had seen healthy appendices removed because the symptoms had indicated appendicitis. Operation involved a risk to life and in his opinion it was best not to lay down any hard-and-fast rule but to weigh every case on its own merits.—Mr. CAIRD said that in the wards with which he had been connected there had been 174 interval operations in seven years with no deaths. Even in such cases there was a danger, however, and he had grown bacillus coli communis and a diphtheroid organism from the gelatinous matter covering over an old perforated appendix.—Mr. H. J. STILES said that if he were called at night and found a fulminating case he would operate at once and in acute cases always within 48 hours. The difficult cases were those seen for the first time two or three days after the onset; in such the surgeon's own experience must be the guide. A point which helped in diagnosis was the presence of fine crepitation in the subcutaneous tissue of the right iliac fossa. Among 52 acute cases he had had six deaths, or 11·5 per cent., and among 150 interval cases in two years he had one death.—Dr. D. C. A. MCALLUM, Dr. G. LOVELL GULLAND, the PRESIDENT, and others also took part in the discussion.

Dr. FLEMING gave a demonstration of the Changes in the Optic Nerve in cases of Intracranial Tumour. He said that the marked hypertrophy and proliferation of the neuroglial cells in the optic nerve in these cases were different in some respects from what was seen in the neuroglial cells in the brains of cases of general paralysis of the insane. There was nuclear mitosis, often two or more nuclei being seen in one cell, and the cytoplasm in some of the cells lacked definite outline, resembling a condensation of fibrillæ in the neighbourhood of the original cell body. The processes became much thicker and more easily traced for a considerable distance from the parent cell. These changes were best marked in the orbital portion of the optic nerve, being most obvious at the periphery of the nerve near the pial sheath but were also seen throughout the whole of the nerve. They were not nearly so obvious in the optic tracts, although they were very characteristic in the neighbourhood of the tumour or tumours in the brain. Dr. Fleming considered that the limitation of these pathological changes depended on the great development of neuroglia, normally, in the orbital part of the optic nerve in contrast to the small number of these cells in the optic commissure and tracts. He noted in several cases a complete break in the continuity of the neuroglial hypertrophy between the optic nerves and the brain tissue near the tumour. The neuroglial changes were most satisfactorily demonstrated in cases of optic neuritis which were advancing to consecutive atrophy. He showed incidentally how the neuroglial hypertrophy brought into prominence the existence of other elements in the neuroglia which Dr. W. Ford Robertson had designated mesoglial cells. These cells might possibly increase in number to some extent in optic neuritis, but they did not undergo any hypertrophy. The neuroglial cells in primary and secondary atrophy of the optic nerve showed no hypertrophy at all comparable to that found in optic neuritis due to intracranial tumour. In tuberculous meningitis no optic neuritis occurred unless there were coexistent tumours in the brain substance. In neuroretinitis of renal origin similar neuroglial changes were found and closely resembled those seen in intracranial tumour. Dr. Fleming argued in favour of a toxic origin for the neuroglial changes in optic neuritis due to intracranial tumour. He considered that the hypertrophy of neuroglial cells was primary, although by that statement he did not intend to convey the idea that it constituted the only primary lesion. The lymph channels in the orbital portion of the optic nerve were more numerous than in the remaining part of the visual tract and this, together with the greater number of neuroglial cells histologically, might account for the position of the most marked neuroglial hypertrophy and proliferation.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF PATHOLOGY.

Exhibition of Specimens.

A MEETING of this section was held on Jan. 10th, Dr. A. R. PARSONS, the President, being in the chair.

Dr. HENRY T. BEWLEY exhibited specimens of Septic Endocarditis obtained from a man born in 1885. In 1898 he had suffered from rheumatic fever, being laid up for six months, and during the following three years he had further attacks. He went into hospital in February, 1905, suffering from breathlessness and palpitation. He was found to have a hypertrophied heart, double aortic disease, and mitral regurgitation. He was again admitted to hospital on Oct. 19th, 1907, and died on Dec. 16th. His last illness had begun in the previous June with feverishness, occasional sweatings, and loss of strength. While in hospital his evening temperature rose to 101° and 102° F., and his morning temperature varied from normal to 100°. The condition of the heart was much the same as before and sometimes a presystolic thrill was felt. The diagnosis was septic endocarditis. At the necropsy the heart was found very much enlarged and the pericardium was found to be universally adherent—a condition of which there was no clinical sign whatever. The right cavities of the heart were comparately small, the left ventricle was enormous, and both the mitral and aortic valves were festooned with soft pink vegetations. The kidneys were enlarged, the spleen was very much enlarged, and there was an abscess in connexion with an infarct in the spleen. Dr. W. G. Harvey made an examination of one of the vegetations, which showed enormous numbers of cocci of the streptococcus type. The case was therefore one of endocarditis, with an organism of extremely mild virulence; the sepsis had lasted fully six months.

Dr. R. TRAVERS SMITH gave the main clinical facts of a case of Intra-thoracic Tumour. The patient, a man, aged 56 years, was admitted to hospital on April 23rd, 1907, and died in about six weeks. A few months before admission he received a heavy blow on his chest, but it could not be said how much that had to do with the growth in his thorax. An effusion in the patient's right pleural sac accumulated rapidly and on tapping it they found that it had the character of a passive effusion, with poverty of albumin and cellular elements. He had to be tapped several times. Cyanosis was then very remarkable and he began to breathe with a slight stridor. About a week before his death he became very œdematous in his lower extremities, and some fluid formed in the peritoneum. One day he complained of violent pain in his right axilla and died six or seven hours afterwards from respiratory embarrassment. The disease was found to be a lymphosarcoma involving all the structures in the thorax. The whole of the superior vena cava was absolutely filled with it,

and it grew high up and into the innominate vein. It projected into the right auricle of the heart and filled it up, and projected into the ventricle.

Dr. HENRY C. EARL exhibited a specimen of Extensive Lympho-sarcoma in the Upper Parts of the Thorax but lying more in front of the structures than surrounding them. It grew down on to the pericardium and the heart was covered all over with a thick layer of tumour. It extended to the left pleura and from it into the lung. There were also several globular secondary growths in the liver of the same structure.

Dr. WILLIAM BOXWELL exhibited a specimen of Aortic Aneurysm taken from a man, aged 33 years. At the necropsy the aorta was found to be the seat of a saccular aneurysm of the size of a duck's egg. The innominate artery was involved in the aneurysm, while the left carotid and subclavian opened directly into the sac. The aneurysm lay directly under the right sterno-clavicular articulation and caused a partial dislocation of the joint. The sac was crossed in front by the left innominate vein, which was incorporated in its wall and nearly obliterated, its function having been taken on by an enlarged left superior intercostal. Both recurrent nerves must have been subjected to considerable pressure, as were also the trachea and œsophagus.

Dr. BOXWELL also showed specimens obtained from two cases of Poisoning by Crude Phenol. The first patient was a girl, aged 15 years, who swallowed four ounces of the poison. She was dead when brought to hospital and the necropsy was made about 24 hours afterwards, no attempt having been made to counteract the effects. The stomach was of a leathery consistence; the serous surface was dull and of a bright cherry-red colour. The same appearances were noticeable on the contiguous surface of the spleen. The mucosa of the stomach and œsophagus was hard and brittle, dull greyish-white in colour, with whiter points resembling incrustations, as if roughly painted with white lead. There was no evidence of this necrosis on the tongue or fauces, although in the latter an œdematous condition of the mucous membrane was very remarkable. The second patient was a child, aged 12 months. The amount of the poison swallowed could not be accurately ascertained. The child was still alive when removed to the hospital. About four ounces of whisky were administered within a few minutes of the dose of phenol, followed by a copious irrigation of whisky and water. There was no other antidote used. The amount of coagulation necrosis was not great, the stomach bearing a marked contrast to that of the previous case. The condition of the pharynx and œsophagus in the two cases was much the same. Some details of a third case were also given, where a woman, aged 27 years, had swallowed eight ounces of crude phenol. She also was treated with whisky, whisky and water, and glycerine and water given through a stomach-tube. A considerable quantity of brown fluid smelling strongly of carbolic acid was syphoned off with the initial dose of whisky and as a result of the treatment the woman was doing well. It was a remarkable fact that within a few minutes of the administration of whisky she recovered consciousness and within an hour was vomiting naturally.

The SECRETARY exhibited an old museum specimen showing a Round Worm doubled up in the trachea and larynx of a child.

SOUTH-WEST LONDON MEDICAL SOCIETY.—A meeting of this society was held on Jan. 8th, Dr. A. Dumville Roe, the President, being in the chair.—Mr. Charles Ryall opened a discussion on the Diagnosis and Treatment of Hæmorrhage from the Mouth, Nose, and Stomach. Dealing chiefly with hæmorrhage from the stomach Mr. Ryall spoke of the importance of accurate diagnosis and of keeping in mind the possibility of carcinoma supervening on what appears to be a simple chronic inflammatory condition. He referred in detail to the condition known as gastrostaxis and to the hæmorrhage in cirrhosis of the liver and from the œsophagus. Treatment of severe hæmorrhage resolved itself into the use of morphine and rest. Drugs were of little use except in less severe cases; ice, which should be ground, was useful, and the ice-bag when used should not be allowed to produce pressure on the abdomen. Gastro-enterostomy was frequently successful in removing the more prominent troubles in suitable cases. Mr. Ryall having briefly referred to bleeding from the nose and mouth, the discussion was continued by the President.—Mr. Mark Robinson inquired what was the reason that the presence of blood in the stomach induced vomiting.—Mr. J. Gay spoke of hæmatemesis in hysteria, and referring to epistaxis wondered if plugging the posterior nares was not less frequently required nowadays. He had found that in a large number of cases the hæmorrhage came from a septal vessel just within the nares where it could be easily controlled.—Mr. E. F. White thought that drugs were useless in severe cases. He had administered adrenal with little local effect and had seen toxic symptoms arise from over-absorption. He had had experience of hæmorrhage from the dilated veins of the œsophagus and noted that in duodenal ulcer the course was commonly more rapidly downhill than in any form of gastric ulcer.—Dr. M. G. Biggs agreed that a large number of cases of epistaxis were due to the rupture of a septal artery. He had had experience of gastrostaxis which was more alarming to the medical attendant than to the patient who was used to it. He inquired whether the view of the Leeds school that all gastric ulcers should be excised when discovered as a precaution against subsequent carcinoma was widely held and practised.—Mr. Aitken recorded two cases of gastrostaxis and advocated an absolute starvation in all cases of gastric ulcer. He had found calcium chloride of little use unless it was given in teaspoonful doses of the dry salt; in that form much benefit appeared to be obtained.—Dr. W. G. Dickinson mentioned two cases of sudden death from gastric hæmorrhage, and Dr. R. Carswell, Dr. C. E. McDade, and Mr. E. J. Pritchard joined in the discussion which was closed by Mr. Ryall.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held on Jan. 17th, when Dr. W. Langdon Brown, the President, showed the following cases:—1. A man, aged 29 years, with Congenital Heart Disease, who had well-marked clubbed fingers, hæmoptysis, and a systolic apical murmur. The condition was probably one of patent septum ventriculorum. 2. Two children, brother and sister, with Congenital Defects. The boy, aged three years, had congenital heart disease. He had marked cyanosis, clubbed fingers, and a systolic apical murmur due to an imperfect septum. The girl, aged nine months, had her left hand like a flapper, absence of nearly the whole of the radius and of the thumb. 3. A man, aged 59 years, with Melanotic Sarcoma of the Lung. Four years ago he had his right eye removed for "cancer." Six months ago he had five and a half pints of blood-stained fluid removed from a left-sided pleural effusion. There was bulging of the left side of the chest posteriorly in the lower half. There were markedly enlarged veins over the upper chest and the lower abdomen on the left side, the blood flowing away from the bulging area. There were several small nodules over the abdomen and the chest, and a shotty nodule above the left clavicle was excised and found to be melanotic sarcoma.—The President also showed the Heart of a man, aged 39 years, who had died from well-marked Stokes-Adams Syndrome.—Dr. L. U. Young showed a Fibroma of the size of a large orange which he had removed from the left labium majus of a healthy, muscular woman, aged 21 years, and which had existed for from four to five years.—Dr. D. Ross demonstrated a well-nourished lad, aged 18 years, who was a typical Ruminant. From 15 to 20 minutes after a meal, at intervals of about four minutes, the food returned by mouthfuls, to be remasticated and again swallowed. It occurred mostly when he ate hurriedly and was unattended by nausea, retching, or discomfort. Farinaceous foods and those containing cellulose almost invariably regurgitated. He described the second mastication as giving rise to a pleasant sensation. The condition was probably a motor gastric reflex neurosis.—Dr. Ross also showed a man, aged 47 years, who had undergone Gastro-enterostomy for Cancer of the Wall of the Stomach and who had very much improved since the operation.

EDINBURGH ROYAL MEDICAL SOCIETY.—At a meeting of this society held on Jan. 10th Professor Robert Muir (Glasgow) gave a demonstration on Repair, Hypertrophy, and Tumour Growth in the Liver. His results were taken from human livers which had come into his hands and hence were of more value than experimental results. In a case of 14 days' old rupture of the liver there was clearly seen evidence of proliferation of the epithelium of the bile ducts to form new liver cells and also of hypertrophy and proliferation of the uninjured liver cells to increase their functional power. Cells undergoing this proliferative change were found larger, less granular, and often multinucleated. The result of such changes was irregularity in shape and size

of the lobules, with displacement eccentrically of the central vein. These changes were demonstrated also from livers showing subacute yellow atrophy and cirrhosis. This proliferative change in cirrhosis often went further and gave rise to the malignant epitheliomata of the liver seen in cirrhotic livers. In such tumours all stages of cell growth were seen, from the proliferative changes found in rupture to the most irregular forms of cells, many having very many nuclei. These tumours were often multiple and seemingly of the same age, so that the influences determining tumour growth in one part of the liver must have been effectual in determining such growth at another part. Professor Muir, in summing up, showed how this was comparable to multiple epitheliomata after psoriasis.

PATHOLOGICAL SOCIETY OF MANCHESTER.—A laboratory meeting of this society was held in the Pathological Department of the University on Jan. 15th at which the following specimens were shown. Dr. W. B. Anderton: Specimens recently added to the museum.—Dr. C. H. Melland: Microphotographs of the Blood in Various Conditions and Illustrations of the Methods of Staining Blood Films.—Dr. G. E. Loveday: Epithelial Odontomata.—Dr. F. Craven Moore: Specimens illustrating Morbid Conditions of the Stomach.—Dr. D. Orr and Dr. R. G. Rows: Specimens illustrating Morbid Lesions of the Central Nervous System, Natural and Experimental.—Miss Elsie M. Royle: Specimens from two cases of Leucocythæmia.—Dr. J. Lorrain Smith: Hæmolymph Glands.—Dr. Lorrain Smith and Dr. W. Mair: Specimens illustrating the Application of Weigert's Myelin Method of Staining.—Other specimens were shown by Dr. C. Powell White, Dr. N. J. H. Gavin, Mr. Wolstenholme, and Mr. Roberts.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—A meeting of this society was held on Jan. 17th, Sir Patrick Manson being in the chair.—Dr. W. Carnegie Brown, in an interesting biographical sketch of Professor Fritz Schaudinn, said that the great professor's life was lost as a direct result of his disastrous experiment of self-infection and it was more than probable that his health was undermined by his almost reckless industry, for Schaudinn would sit continuously for many days and nights following the life-cycles of a series of different organisms. Schaudinn won for himself in his short lifetime a reputation that in his own branch of science was altogether without parallel and he achieved this by his unwearying industry, by his marvellous facility of technique, by his phenomenal power of interpretation, and by his almost supernatural scientific "flair."—Dr. G. C. Low read a paper on the Unequal Distribution of Filariasis in the Tropics.

Reviews and Notices of Books.

Diseases of Women: A Clinical Guide to their Diagnosis and Treatment. By GEORGE ERNEST HERMAN, M.B. Lond., F.R.C.P. Lond., Consulting Obstetric Physician to the London Hospital. Third edition. With 265 Illustrations. London and Paris: Cassell and Co. 1907. Pp. 900. Price 25*s.*

THE more often we consult this work of Dr. Herman the more we are impressed with the excellence of the teaching it contains and the clearness of its style. Perhaps it does not appeal to the ordinary student so much as other books written more ostensibly for the purpose of enabling him to pass examinations, but as a safe guide to good treatment we know of no work on gynæcology in our language which is its equal. The third edition has now appeared and the author has revised carefully the whole work. He has made certain alterations and additions which tend to increase its value but it retains all the original features which distinguish it from most other text-books. The chief danger which besets the neophyte in the practice of gynæcology is the tendency to neglect the teachings of general medicine in his treatment of his patients. A careful reading of the first part of this book would go far to cure him of such a tendency but the best method of avoiding any such circumscribed view is to acquire a thorough grounding in general medicine before taking up a special branch. If such a course were pursued more frequently by intending specialists we should hear less of their narrow-mindedness as regards their particular "allotment of the body," as we have heard it called by a layman with little reverence for the present-day tendency to over-excessive specialisation.

In an endeavour to present a clear view of the exact nature of that important disease hysteria Dr. Herman has elaborated his account of this affection and has embodied in his chapter on the subject the modern conception of it as a disease characterised by definite physical signs. Written as this book is from the point of view of the clinician no mention was made in former editions of the pathological histology of the various diseases described. In view of the great importance of the recognition of cases of early carcinoma of the uterus by the aid of the microscope Dr. Herman has given a brief account of the appearances under the microscope of cancer of the uterus with some additional illustrations. And here perhaps we may be allowed to find some fault. Many of the illustrations are of interest from the historical aspect and some are exceedingly good in themselves, although they are badly reproduced and of old standing. On the other hand, many of the illustrations could readily be replaced by better ones, not only better examples of the different diseases which they are intended to illustrate, but also infinitely better examples from an artistic standpoint. We know Dr. Herman's appreciation and veneration for many of the masters of English gynæcology but we would venture to suggest that he should not allow his book to have its value diminished by the reproduction of so many poor and old drawings. The section dealing with the interesting disease of chorion-epithelioma has been considerably amplified and there are some most excellent illustrations in this case taken from the monograph of Dr. J. H. Teacher. The recent work of Dr. H. Williamson and Dr. W. H. Atlee on the Nature of Vascular Caruncles has also been incorporated in the chapter on Painful Micturition. We regret to see that in the chapter on Cancer of the Cervix the author still recommends bisection of the uterus in performing vaginal hysterectomy, a plan which we cannot but think faulty, in that it must increase the risk of implantation of the cancer cells.

The section on Abdominal Hysterectomy has been revised and brought up to date. We gather Dr. Herman thinks that for simple cases of fibroid tumours not involving the cervix subtotal hysterectomy is a sufficient and good operation, and that he would reserve pan-hysterectomy for growths which cannot for various reasons be treated by the former operation. We consider this is the common-sense view to take of the question; the mortality of the two operations at the present day is practically the same and the reasons which are brought forward by the adherents of the one or the other seem fairly equally balanced when regarded by the impartial observer.

This, in our opinion, is the best text-book of gynæcology in the English language. Written by a scientific physician from the clinical point of view its teaching is based on sound principles which have stood the test of practical experience.

Eye Injuries and Their Treatment. By A. MAITLAND RAMSAY, M.D. Glasg., Ophthalmic Surgeon, Glasgow Royal Infirmary; Professor of Ophthalmology, St. Mungo's College, &c. Glasgow: James Maclehose and Sons. 1907. Pp. 210. Price 18*s.* net.

IN bygone generations it was customary for the medical Chrysostoms of the day to publish their words of wisdom in the form of collected essays and clinical lectures. These were always ponderous and dignified, often dogmatic, as befitted *ex cathedrâ* statements; they were usually models of classical erudition and literary style, and sometimes they

contained useful knowledge and even new facts. Too often the teaching was gilt, not golden. Since medicine has become more a science and less an art this sort of literature has begun to die out. We watch its death struggles with equanimity, though when some peculiarly aggressive flicker of vitality manifests itself we are inclined to wish that it would "get on with its dying." We may regret the deterioration of literary style and deplore the too frequent lapses of grammar and composition which characterise so many of the medical writings of to-day, but we may be proud of the fact that while these defects are only too patent the science of medicine forges ahead by leaps and bounds.

The volume before us combines some of the virtues of both the old and the new types. It is well printed on large pages, with wide margins, uncut edges, and a gilt top; it is sumptuously illustrated—quite an *édition de luxe*. It is true that most of the subject matter will be found in any good treatise on diseases of the eye but it is brought forward here in such a pleasant fashion that it may well prove attractive to the busy general practitioner, for whom, we presume, it is primarily intended. There are many things in it which will be of interest and value to the trained ophthalmologist, for he cannot but benefit by the ripe experience of a distinguished *confrère*. His attitude must necessarily be a critical one. He will regret the incompleteness of the book as a treatise on injuries of the eye. We cannot think that he will always agree with the author's methods and still less with his views on some points of ocular pathology. As examples of the first-named he may doubt the advisability of attempting to replace a prolapsed iris after an ordinary injury and of aiding this procedure by the instillation of eserine. Separating the conjunctiva all round the cornea, passing a purse-string suture through its free margin, and pulling this tight so as completely to cover the cornea, will only exceptionally be indicated, in his estimation, in the treatment of perforating wounds. He will probably prefer to introduce a glass ball rather than paraffin into Tenon's capsule as a modification of enucleation. Th author's views on the theory of sympathetic ophthalmia savour of antiquity. "Numerous experiments have conclusively demonstrated that irritation of the ciliary nerves in one eye produces not only dilatation of the blood-vessels but also increased secretion of albumin into the aqueous humour of the other." Römer's recent extremely delicate experiments entirely, and in our opinion conclusively, negative this statement.

Dr. Ramsay describes the methods of determining the presence, and localising the situation, of intraocular foreign bodies. The large magnet which he uses is apparently the same as Volkmann's; he considers it preferable to Haab's. The chapter on ocular therapeutics is the one which will most attract the ophthalmologist, for it gives many hints of the author's predilections in drugs. He rightly lays stress on the general treatment of the patient, which is too often forgotten in the absorbing interest of the local condition. Various silver preparations, anæsthetics, mydriatrics, and so on, are passed in review and attention is drawn to the indications for subconjunctival injections. The formulæ in use at the Glasgow Ophthalmic Institution form an appendix to the work.

Special note must be taken of the coloured plates which adorn the book. The drawings of the eyes are extremely good but the artist has been unfortunate in his choice of a skin tint. The foreigner glancing through the book might conclude that Dr. Ramsay has an extensive practice amongst negroes. The outline drawings contain many inaccuracies. Two plates illustrate Dr. Thomas Reid's unorthodox histological views; it would have been well to point out that these views are not generally accepted by histologists.

In conclusion, we may express a doubt as to whether books of this kind are worth the trouble and expense which they entail. Do beautifully reproduced coloured drawings of common pathological external conditions serve any very useful purpose? We think not. Anyone will learn far more from careful examination of the patients and no one will be made much more competent to treat such cases by study of the drawings.

Plasma und Zelle. Erste Abteilung: Allgemeine Anatomie der lebendigen Masse. Bearbeitet von Professor Dr. MARTIN HEIDENHAIN in Tübingen. Erste Lieferung: Die Grundlagen der mikroskopischen Anatomie, die Kerne, die Centren und die Granulalehre. (*Plasma and Cell.* First Section: General Anatomy of Living Matter. Edited by Professor MARTIN HEIDENHAIN of Tübingen. First Part: The Elements of Microscopical Anatomy, the Nuclei, the Centrosomes, and the Granule Theory.) With 276 (in part coloured) illustrations in the text. Jena: Gustav Fischer. 1907. Pp. 506. Price M.20; to subscribers M.16.

THIS work of Professor Heidenhain, which constitutes the last part of Bardeleben's "Handbuch der Anatomie des Menschen," has appeared at a most opportune moment and supplies a work the need of which has been very greatly felt. The author, as it were, here "puts the finishing touches" to our knowledge as regards many points of vital interest in the study of this subject. The anatomical aspect of living matter is the chief point under consideration, but the author also, in a most comprehensive and interesting manner, touches upon the various branches of biology. No such complete treatise on this subject has hitherto been published and we strongly recommend the book to every medical man who is interested in the biological side of his profession. It cannot fail also to be of great benefit to biologists as a book of reference and we are confident that it will be received by them with all the enthusiasm which it deserves.

Professor Heidenhain, as usual, proves himself complete master of his subject. The general aspect which he puts forth in dealing with the different problems is a very pleasing one and comprises the biology of the cell in the full sense of the word. He gives a fairly comprehensive review of the historical development of our anatomical and biological knowledge of the cell in general. Here and there we find the author's own ideas put forth. In the question of the differentiation of living matter he considers that there is no constant connexion between the structure of the nucleus and the function of the protoplasm. Regarded from a general point of view, the nuclei of the tissue cells are markedly inactive. The work also contains much interesting and instructive information as regards the chemistry both of the nucleus and of the protoplasm. The methods of staining, and so on, are also considered but the author does not go into detail concerning this subject.

In several minor points we are able to agree with the ideas set forth by the author. For instance, we consider that the lining of the cell plays quite as important a rôle as the author seems to indicate. It is a noteworthy fact that, although he does not actually commit himself to any decided opinion, he yet does not appear to support the hypothesis of the individuality of the chromosomes. The important subject of spermatogenesis is a point upon which the author has enlarged and with which he has dealt in a comprehensive, interesting, and altogether satisfactory manner. In the fourth portion of the first part Professor Heidenhain deals fully with our knowledge of the granules. Altmann's theory that the granules are active parts of the protoplasm, granulation in gland cells, mitochondria, the vital staining of the granules, and so on, are points which are noted. In the last chapter the protomere theory—i.e., the composition of the plasma out of minute dividing particles—is gone into at some length.

In conclusion, we should like to draw attention to the complete bibliography which is given at the end of each chapter. The value and interest of the work are also much enhanced

by the many elaborate illustrations with which it is provided and which have been exceedingly well reproduced. Many of them are from original drawings made by the author whose efficiency in this direction needs no further comment.

The Essential Similarity of Innocent and Malignant Tumours: a Study of Tumour Growth. By CHARLES W. CATHCART, M.A., M.B., C.M. Edin., F.R.C.S. Eng. and Edin., Surgeon, Royal Infirmary, Edinburgh; formerly Conservator of the Museum of the Royal College of Surgeons, Edinburgh. With 86 illustrations, for the most part photographic reproductions from specimens. London: Simpkin, Marshall, Hamilton, Kent, and Co., Limited. Bristol: John Wright and Co. 1907. Pp. 79 and 38 plates. Price 9*s.* 6*d.* net.

THE medical student is taught dogmatically that a new growth is either innocent or malignant but when he has attained sufficient knowledge to be able usefully to think for himself he finds that in practice this sharp distinction cannot always be maintained. Of two tumours, resembling each other closely histologically, one may lead an entirely innocent course and the other may show signs of malignancy. Moreover, a new growth may for many years have enlarged but slowly and yet suddenly its rate of growth may increase and other malignant manifestations may appear. Mr. Cathcart has written this book to call attention to these important facts and he advances many proofs that innocence and malignancy are merely the marks of the extremes of a long series of growths and that all intermediate stages occur. He considers it of importance that the idea of the essential similarity of innocent and malignant growths should be recognised, for, as he says, no theory of the causation of tumour growth can be satisfactory which does not apply equally to innocent and to malignant tumours and that no search for a cure for cancer is likely to be successful (unless by chance) so long as the search is directed by the theory that cancer is a disease by itself. Further, he claims that no type of tumour can be considered with respect to operative treatment to be necessarily exempt from the taint of malignancy. We agree with Mr. Cathcart in much that he maintains, though he seems to us to be a little inclined to generalise beyond the strength of the facts. It is true that in many classes of tumours all gradations occur between the purely simple and the very malignant, yet in other classes the distinction is much more clearly marked. It is early yet to dogmatise as to the exact relations of tumours; when we are acquainted with their true etiology we shall then, and not till then, be in a position to say exactly what is the real reason why one tumour is malignant and another not. We may mention that we quite agree with what Mr. Cathcart says as to the local recurrence of a tumour as a sign of malignancy. Any form of tumour will recur if part has been left behind; and recurrence is more likely to occur in malignant growths merely because it is difficult in such growths to define the limits of the original tumour. The book is well worth reading, for it emphasises portions of the pathology of tumours to which too little attention is generally paid.

A Manual of Clinical Diagnosis. By CHARLES E. SIMON, B.A., M.D., formerly of the Resident Staff of Johns Hopkins Hospital; Professor of Clinical Pathology at the Baltimore Medical College; Clinical Microscopist to the Union Protestant Infirmary. Sixth Edition, thoroughly revised. Illustrated with 177 engravings and 24 plates in colours. London: Henry Kimpton. Glasgow: Alexander Stenhouse. 1907. Pp. 682. Price 21*s.*

THIS work forms a manual of clinical diagnosis by means of microscopic and chemical methods for students, hospital physicians, and practitioners. The fact that it has reached the sixth edition sufficiently demonstrates that the efforts of the author have met with the success which they deserve in supplying a text-book dealing with the most modern aids to diagnosis. A large amount of work has been accomplished in this line of research since the last edition was published, but Dr. Simon has dealt with it in a most praiseworthy manner and by dint of careful revision has incorporated the new material without greatly enlarging the size of the volume. He states in the preface that every page has undergone a radical review so that all the most modern microscopic and chemical processes likely to assist in diagnosis have been included. The chapter on the examination of the blood has been brought fully up to date. The methods of counting the blood cells are fully described and the various varieties of leucocytes together with the deductions to be derived from observation of them are carefully considered.

The section dealing with parasites in the blood is capitally worked out and a large amount of valuable information is presented. A full account is given of the malaria organism and its cycle of development is explained. The latest researches on trypanosomiasis are included, reference being made to the successful efforts of Novy and McNeal to cultivate the parasite in artificial media. A good description is given of the spirochæta pallida, together with the methods which may be employed to demonstrate it in material obtained from syphilitic lesions. A chapter on opsonins has been introduced. Full details are given regarding the technique, which is necessarily rather involved, and a careful study of the directions should enable the reader to carry out the necessary processes. Dr. Simon has treated this subject with due caution but we consider that he has fairly presented the knowledge already obtained as regards the opsonic index.

Two appendices have been added. The first describes the methods of preparation of culture media and the second indicates the outline of a course in clinical laboratory methods. The latter is especially intended for post-graduate study. The whole work is excellently illustrated, the coloured plates being particularly well executed. We can cordially recommend this manual to our readers as containing trustworthy information on laboratory methods of diagnosis.

Diet in Health and Disease. By JULIUS FRIEDENWALD, M.D., Clinical Professor of Diseases of the Stomach in the College of Physicians and Surgeons, Baltimore; and JOHN RUHRÄH, M.D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. Second edition, thoroughly revised and enlarged. London and Philadelphia: W. B. Saunders Company. 1906. Pp. 728. Price 18*s.* net.

THE second edition of this useful book has been improved by a few additions and minor changes but in its main features it is unaltered. The authors have evidently reviewed the literature of the subject with great care and have presented in a readable form various alternative diets adapted to many conditions. Where they give the recommendations of other authorities they usually quote extensively from the original papers. A valuable feature is that in cases where a definite diet is advised the heat values in calories are usually appended, or such data are given in tables as to allow those values to be calculated easily.

In our review of the previous edition we pointed out that the account given of the chemistry and physiology of digestion was a somewhat scanty one and in many ways hardly up to date. Although some alterations have been made it is still hardly worthy of the rest of the work. The various classes of food substances are considered in some detail and very full tables of their analysis are given; their digestibility and use as foods are also carefully described. The important work of Chittenden in regard to protein metabolism is quoted and its applications are discussed. The section dealing with

salts and their metabolism in the body has been extended and is a useful study of the subject. The consideration of beverages is also full and includes tables of the composition of the most important mineral waters and a useful summary of the effects of alcohol and of its uses in health and disease, in which the opinions of several authorities are quoted at some length. The effects of a number of factors upon foods and their use in diets are given, including the questions of the concentration, the preservation, and the cooking of foods, and of food adulteration and the varieties of food poisoning. The subject of the feeding of infants is very fully dealt with and this section is one of the best in the book. The diets adapted to special conditions are given, such as those for the aged and those advised during pregnancy. In this connexion the dietary recommended by Prochownick in pregnancy with pelvic contraction is given in detail. About half the book is devoted to the presentation of diet in disease; each disease is separately considered and various diets are suggested in many cases. This method is a convenient one, since, although it involves considerable repetition, it facilitates the use of the book as a work of reference. In most cases not only is the total quantity of food to be given indicated but also the times at which the meals are best taken and also the amount of fluid to be permitted. Where different diets are advised by several authorities these are clearly separated from one another and are discussed by the authors. Various forms of dietary used in institutions are given in detail with their heat values. A chapter is devoted to recipes for beverages and special articles of diet. The concluding section consists of lists of substances which may and may not be given in various diseases, constituting what the authors term "rapid reference diet lists."

The book is well printed, is easy of reference, and is a valuable presentation of the subject of which it treats.

LIBRARY TABLE.

An Introduction to Physiology. By WILLIAM TOWNSEND PORTER, M.D., Associate Professor of Physiology in the Harvard Medical School. London and Philadelphia: J. B. Lippincott Company. 1906. Pp. 587.—This work is drawn up to meet the requirements of the "concentration" system as practised in Harvard Medical School at Boston, a system which means that the student at the time shall study only one principal subject such as pathology or physiology. In Harvard the first half year in the medical school is devoted to anatomy and histology, and the second to physiology and biological chemistry. The traditional teaching of physiology is preceded by experiments and observations by the student himself. In the old method the stress is upon didactic teaching; in the new there is less didactic teaching but the stress is on observation. This book is very much like some of the works on practical physiology published in this country but there is much less chemical physiology. The scope of the work will be best understood by stating that it gives an account of fundamental and accessory experiments in some fields of physiology. These are general properties of living tissues, methods of electrical stimulation, graphic method, electrical, chemical, and mechanical stimulation of nerve and muscle, and irritability and conductivity. The second part deals with the "income of energy" under the following heads: fermentation, blood, and respiration; while Part III. treats of the "outgo of energy." It comprises the consideration of animal heat, electrometric phenomena of muscle and nerve, the change of form of a contracting muscle, the central nervous system, skin, general sensations, taste, eye and vision, mechanics of respiration, circulation of the blood, and innervation of the heart and blood-vessels. The directions are clear, definite, and precise, while 74 illustrations help the student in the setting up his apparatus and arranging his experiments. Students preparing for the higher examinations will find it most helpful. This is the second edition and in its "final form" it will constitute "A Laboratory Text-book of Physiology."

JOURNALS AND MAGAZINES.

The Edinburgh Medical Journal.—In the January number of this journal Dr. W. Allan Jamieson records some interesting observations on rarer varieties of bullous affections of the skin—anomalous herpes zoster, dermatitis herpetiformis, pemphigus foliaceus and vegetans, and lichen planus with bullous lesions. An address by Dr. G. A. Gibson on Arterial Pressure emphasises the value of instrumental measurement of blood pressure, examples of which are to be seen in acute pneumonia and in aortic disease, wherein it is a useful guide to prognosis. Dr. J. S. Fowler writes on the "energy-quotient" in infant feeding, and Dr. D. Chalmers Watson on chronic arthritis, in which disease he holds that sufficient attention has not been paid to other organs besides the joints. A presidential address delivered before the Edinburgh Royal Medical Society by Dr. David M. Barcroft on Some Clinical Accessories deals pleasantly with the discoveries of the method of percussion, of the stethoscope, and of the sphygmograph.

The Scottish Medical and Surgical Journal.—The first number of the new year opens with a presidential address by Dr. A. Rudolph Galloway to the Aberdeen Medico-Chirurgical Society on the subject of Sight-testing and the drawbacks and dangers inherent in the prescribing of spectacles by opticians. A paper by Dr. Alexander Goodall and Miss Isabel Mitchell on the Physiological Action of the Formates may be commended to the study of those who have been impressed by some recent writings in praise of these drugs as stimulants. These authors find that the sodium and potassium salts are toxic, while the calcium salt may perhaps be useful as a soluble salt of lime in place of the chloride or lactate but not on account of its acid radicle. The sixth instalment of Dr. A. Dingwall Fordyce's studies on infant feeding deals with artificial substitutes for breast milk and among other things advocates the use of scalded rather than sterilised cows' milk.

The Bristol Medico-Chirurgical Journal.—In the December issue Dr. Henry Waldo writes on Syphilis in the light of recent investigations on the spirochæta (treponema pallidum) He supports the intermittent method of administering mercury which is in favour on the Continent. Mr. Ernest W. Hey Groves writes on Spinal Anæsthesia which he believes to be useful in certain special emergencies but not as a routine method; and Dr. F. Percy Elliott continues his paper on the Value of Compression of the Aorta in Post-Partum Hæmorrhage. A case of Generalised Sarcoma recorded by Dr. F. G. Bushnell was remarkable for the alterations in the blood, which showed a high degree of lymphocytosis (large lymphocytes, 37 per cent.; small, 29 per cent.), the polymorphonuclear cells only reaching 13 per cent. Dr. William Cotton pleads for uniformity in radiography to enable different observers to compare notes with some degree of accuracy.

THE HOSPITAL SATURDAY FUND.—Sir Savile B. Crossley presided at a special meeting of the board of delegates of the Hospital Saturday Fund Association on Jan. 18th at the offices, Gray's Inn-road, W.C. On the recommendation of the distribution committee it was decided that the sum of £24,708 0*s.* 2*d.* should be awarded to the 209 participating medical charities—namely, 33 general hospitals, £8258 5*s*; 16 cottage hospitals, £323 15*s.*; 75 special hospitals, £8416 12*s.*; 29 dispensaries, £818 16*s.*; 24 convalescent homes, £1483 17*s.*; 19 nursing institutions, £420 15*s.*; and 13 miscellaneous (including ambulance, distribution, and surgical appliance committees), £4986 0*s.* 2*d.* The total receipts for 1907 amounted to £27,168, as compared with £26,460 in 1906, an increase of £708.

New Inventions.

A TRUSS BELT FOR MOBILE OR FLOATING KIDNEY.

IN a paper on Mobile Kidney published in THE LANCET of August 3rd, 1907, p. 283, Mr. E. Stanmore Bishop said that his experience of the use of trusses, belts, or corsets in this condition was not altogether favourable but he mentioned the appliance manufactured for that purpose by Salt and Co. of Birmingham as being perhaps among the best. This firm has now sent us one of its truss belts for mobile kidney in which there is an alteration from the earlier patterns. The belt is made of a stout grey fabric, completely encircles the waist, and, as shown in the illustration, is fastened with

three buckles. Inside there is a pocket containing a removeable indiarubber air-pad for the purpose of making pressure where required. The recent alteration already referred to consists in the addition of a specially constructed steel spring device fixed immediately over the air-pad, by which it is claimed that a more regular and correct pressure is obtainable than with earlier patterns of the appliance.

A NEW MERCURY INTERRUPTER FOR X RAY WORK.

FOR the greater part of the work done with an induction coil as a source of energy it is felt by most of those engaged in this line of investigation that some form of break employing mercury is probably the best to use. First came those in which a wire or blade was made to dip in and out of a vessel containing mercury. These were a great improvement on the platinum break and so long as workers were content to use voltages not exceeding 24 very good results were obtained with the coils then in use. Owing to the almost universal desire to use the current from the street mains directly for coils and also to their higher and increasing voltage interrupters of new design became necessary and these were all constructed upon a common principle—viz., a jet of mercury impinging upon a metal blade. In some the jet itself revolves and in others the jet is stationary while the blade or blades revolve around but close to it—all this taking place under the surface of a liquid dielectric, such as alcohol or petroleum, or in an atmosphere of hydrogen or coal gas. Except in the latter case there was, of course, great churning up of mercury and liquid dielectric which militated against good contact between jet and blade, and this was still further interfered with as time went on by the emulsification of the mercury which always took place sooner or later. For these reasons the output of a coil working with a mercury jet break is always more or less limited, which limit becomes lower and lower as the mercury becomes emulsified and dirty.

The Sanitas Electrical Company of 61, New Cavendish-street, W., has lately brought out a mercury break which possesses many advantages. It is driven by an electric motor which is placed at the bottom of the instrument with its shaft in an upright position. Upon the end of this shaft is mounted a hollow iron container—of about the size and shape of a small ginger jar—which revolves with it. This container, being of larger diameter at the middle than elsewhere and having a certain quantity of mercury and petroleum placed therein it follows that if it be rapidly rotated the mercury, &c., will rise so as to occupy the largest diameter of the jar, the mercury as the heavier liquid lying against the wall of the jar as a continuous band. Inside the container on a level with its equator is mounted a disc of fibre revolving freely on a vertical axis, which can be moved nearer or further from the wall of the container, and having two or more metal segments. This disc is so adjusted that its periphery is slightly imbedded in the mercurial band and contact is made and broken as the metal segments of the disc enter and leave the mercury, the disc being driven around by the mercury itself. The face of the metal contact piece is broad and contact is positive owing to the metal being plunged into the mercury, and as the speed is necessarily high the "break" is sudden and complete. Apparently there is little or no tendency for the mercury to become either dirty or emulsified. The contents of one interrupter which we examined after several hours' use were found to be perfectly clean. In practical use the output of the coil is under the most perfect control and can be varied from a short thin spark to a long and almost continuous ribbon resembling that obtained with an electrolytic interrupter but with a smaller consumption of current. Whether it will take the place of the electrolytic break is not yet certain but there is no doubt that this new form is a great advance on the other mercury breaks hitherto available.

BI-PRONGED FORCEPS.

Mr. S. Gerald Gomes, F.R.C.S. Edin., of Tokio, Japan, writes: "I have designed for use with Reverdin's needle a pair of bi-pronged forceps which have proved very successful. For several years I have used Reverdin's needle and other simpler patterns and felt the want of a better means than the two hands of an assistant to carry the suture down to the slot in these needles, especially in deep and awkwardly

placed wounds in the abdomen. After some experience with the forceps I find that the above-mentioned difficulties are obviated by its use. Moreover, it can also be effectively used in place of the ordinary dissecting forceps and wherever the usual pattern forceps are required. The instrument has been made for me by Messrs. C. J. Hewlett and Son, 35–42, Charlotte-street, London, E.C."

UNIVERSITY OF OXFORD: RADCLIFFE TRAVELLING FELLOWSHIP, 1908.—An examination for a Fellowship of the annual value of £200, and tenable for three years, will be held during the present term, commencing on Tuesday, Feb. 25th. Candidates must have passed all the examinations required by the University for the degree of Bachelor of Arts and for the degree of Bachelor of Medicine. They must not have exceeded four years from the time of passing the last examination required for the degree of Bachelor of Medicine. The successful candidate must before election declare that he intends to devote himself during the period of his tenure of the Fellowship to the study of Medical Science and to travel abroad with a view to that study. The Regius Professor of Medicine and the examiners, two months before the expiration of the second year after the election of each Fellow, present a report on the work done by him to the electors who may, if they think the report unsatisfactory, declare the Fellowship forfeited. The examination will occupy four days. Papers will be set in physiology, pathology, and preventive medicine, and a subject will be proposed for an essay. There will also be a practical examination in pathology. Any candidate desiring to offer in addition a special branch of either medicine or surgery must send notice of this to the Regius Professor of Medicine. All intending candidates should send their names, addresses, qualifications, &c., to the "Regius Professor of Medicine, University Museum," on or before Saturday, Feb. 8th.

THE LANCET.

LONDON: SATURDAY, JANUARY 25, 1908.

The Treatment of Pulmonary Tuberculosis by Graduated Labour.

THE open-air or sanatorium treatment of pulmonary tuberculosis has now become generally recognised as a valuable therapeutic measure. First carried out under a regular system by Dr. BREHMER at Göbersdorf in Silesia, subsequently many institutions were founded upon his model, while various modifications in detail have been made by different physicians as has been recorded from time to time in our columns. All the developments of the treatment have not been in the same direction, and different opinions have prevailed as to the ideal environment of the tuberculous patient in a sanatorium, but we are only considering now the question of exercise. While some authorities attached great importance to rest in the open air, Dr. BREHMER considered that exercise, especially hill-climbing, was essential to the obtaining of the full value of this treatment, and Dr. WALTHER at Nordrach showed that excellent results could be obtained by graduated walking exercise, especially when, in suitable cases, this exercise was being pushed to the extent of walking 20 miles a day. Following upon the observations of the German physicians numerous sanatoriums have been established in this country, the essential principle being that the patient should live as much as possible in the open air but a certain amount of exercise was considered advisable. The sanatorium treatment has now entered upon a new phase and a most important one. At a meeting of the Medical Society of London held on Jan. 13th Dr. MARCUS S. PATERSON, the medical superintendent of the Brompton Hospital Sanatorium at Frimley, read a paper on Graduated Labour in Pulmonary Tuberculosis, which was supplemented by another on the Effect of Exercise on the Opsonic Index of Patients suffering from Pulmonary Tuberculosis by Dr. A. C. INMAN, the superintendent of the laboratories of the Brompton Hospital. These two papers are published in full in our present issue and upon being read were described by Dr. J. KINGSTON FOWLER, President of the Medical Society, as marking an epoch in the treatment of pulmonary tuberculosis.

Dr. PATERSON had observed that many tuberculous patients who had followed their ordinary occupations up to the time of admission to the hospital were in a very fair condition of health. It therefore occurred to him that if some tuberculous patients, being in adverse circumstances and without medical guidance, could act thus without apparent injury they ought, under ideal conditions and with the work carefully graduated in accordance with their physical state, to be able to undertake useful labour. Acting on this idea he has elaborated a system of graduated labour which not only carried out the intention of rendering the patients fit to return to their ordinary occupations on leaving the sanatorium but has proved a most valuable therapeutic measure in the treatment of pulmonary tuberculosis. In his paper he describes in detail the various grades of labour through which the patients are made to pass, together with the precautions which had to be observed in order to protect them from the harm which might ensue if too much effort was attempted. He also mentions the symptoms which suggest that the patients have overtaxed their physical resources. Those physicians who wish successfully to carry out this method of treatment will do well to study carefully Dr. PATERSON'S remarks, for it is on the care that is devoted to detail and on the loyal coöperation of the patient that the result of the treatment will depend. The patients who were sent to the Frimley sanatorium for treatment had all been for some time at the parent institution at Brompton. They were all carefully selected as regards the extent of the disease, the state of the temperature chart (no markedly febrile cases being despatched to the sanatorium), and the evidences which they exhibited of satisfactory resistance to the progress of the disease. When they reached the sanatorium the treatment by exercise was at once commenced. Every patient was informed that he would be treated by prescribed rest and exercise and that as he did not himself know the amount of each required he must do exactly as he was told. Absolute obedience to the orders of the physician in charge of the case was seen to be essential. Dr. PATERSON brings out two points in particular in his valuable paper: First, that special heed must be paid to the word "graduated" in arranging the amount and kind of work to be done by each patient; and secondly, that the effect of that work on each patient as shown by the temperature chart and other signs must be carefully watched. He describes in considerable detail how the labour is graduated at Frimley, while he concludes that if the patient's temperature remains above 99° F. in the case of men or 99·6° in the case of women the patient should be confined to bed, work should be prohibited, and reading should be the only recreation permitted. These two points, reinforced as they are by a record of practical experience, go far to demonstrate graduated labour to be a valuable form of treatment in pulmonary tuberculosis.

Dr. INMAN'S observations on the effect of exercise on the opsonic index of patients suffering from pulmonary tuberculosis corroborate Dr. PATERSON'S clinical results in a remarkable manner. In his paper he gives a brief review of Sir ALMROTH WRIGHT'S investigations and the principles of immunity enunciated by that observer. It has been shown "that auto-inoculations follow upon all active and passive movements which affect a focus of infection and upon all vascular changes which activate the lymph-stream in such a focus." It is by the agency of such auto-inoculations that nature achieves curative effects in bacterial infections. Dr. INMAN carried out his researches at the Brompton Hospital sanatorium in a most thorough and praiseworthy manner. He very wisely eliminated the personal element so far as possible, while he safeguarded himself from the possibility of a biased mind by conducting all his observations with unknown specimens of blood. These were obtained from the patients under the necessary conditions,

but to the experimenter they were simply numbered specimens; he never knew which patient's blood he was examining, a fact which adds a distinct value to the experiments. Dr. INMAN'S charts will be seen to correspond in a most remarkable manner with the progress made by the patients and we commend a careful perusal of his paper to our readers. The practical outcome of his investigations is well expressed by Dr. INMAN at the end of his paper. He points out that the opsonic index has shown that the exercise supplies the stimulus needed to induce artificial auto-inoculation, and that the systematic graduation of the exercise has regulated the dose both in time and amount. Further, Dr. PATERSON and Dr. INMAN are agreed that with the aid of the opsonic index the stimulus can be regulated with scientific accuracy, so that the treatment can be carried out more certainly and more rapidly. In short, the results of these observations, both from the clinical and scientific points of view, have demonstrated that the treatment of pulmonary tuberculosis by graduated labour is successful and founded on sound principles. Hitherto it has been assumed that the open-air or sanatorium treatment of this disease produces its results by improving the general condition and that life in the open air was the most important element in the therapeutics. Now it is more than suggested that although plenty of fresh air is absolutely essential for complete arrest, it is necessary that a series of auto-inoculations should be produced, and that the safest and most ready method of achieving the necessary dosage is graduated labour. This graduated labour has to be supervised very carefully or harm may result; the amount of exercise and work accomplished must be prescribed as carefully by the physician as any combination of drugs. The results of graduated labour in cases of pulmonary tuberculosis when more generally adopted will be watched with interest, meanwhile Dr. PATERSON is to be congratulated on having introduced the method of treatment and Dr. INMAN on the careful work that supplies the scientific corroboration.

Inguinal Hernia in Children.

IN the September number of the *Practitioner* appeared a paper by Mr. H. S. CLOGG containing an account of inguinal hernia in children and as it was based on 126 cases which had been submitted to operation the conclusions drawn are likely to be of interest and value. Mr. CLOGG has never met with what is called direct inguinal hernia in a child and all statistics show that it is intensely rare before puberty, so that it may be taken that inguinal hernia in a child means an oblique hernia. In regard to the question as to the relative frequency of the congenital and acquired forms of inguinal hernia in children the answer is definite. For the production of an acquired hernia some weakness of the abdominal wall is essential but in children there is practically always a ready formed sac supplied by the unobliterated processus vaginalis. Nearly all cases of inguinal hernia in children are of the congenital variety and this is so quite apart from the age of the child, for the sac is congenital even though it may not have been occupied by bowel until shortly before examination. The classification of congenital inguinal hernia which Mr. CLOGG prefers is undoubtedly the best; it divides these herniæ into the total funicular herniæ, in which the whole of the funicular process or processus vaginalis is patent, and those in which the funicular process is partly closed; these are partial funicular herniæ. Of Mr. CLOGG'S 126 cases 115 were in males and of these only 11 were cases of total funicular herniæ, that is, about 10 per cent.

The diagnosis of inguinal hernia in the child seldom presents any difficulty. A swelling in the groin, reducible on pressure, growing tense when the child cries, and often disappearing during sleep, can hardly be anything but a hernia, though occasionally a collection of fluid in a patent processus vaginalis with a very small opening at the internal ring may be mistaken for a hernia. There is another error in diagnosis which may prove of some importance. It is often thought that the only scrotal swelling which is translucent is a hydrocele but in young children where there is no large amount of fat and the bowel wall is thin an inguinal hernia may be translucent and thus it may be mistaken for a hydrocele. If on the strength of this mistaken diagnosis the swelling should be punctured with a trocar and cannula the result would probably be disastrous. The correct diagnosis having been made the question of the most suitable treatment has to be decided. There is a very widespread opinion that circumcision is of some value in the treatment of inguinal hernia in children. We quite agree with Mr. CLOGG that it cannot have the slightest effect in curing a hernia, though a tight phimosis may have assisted in the original descent of the bowel. As to trusses, it is doubtful how often a real "cure" of a hernia is brought about by a truss. The fact that a hernia has not been noticed for some months or years is no evidence that it has been really "cured"; for a perfect cure there must be an absolute obliteration of the sac. Now, the use of a truss may occasionally in very young children lead to the completion of the closure of the processus vaginalis when the closure has only been delayed, but when several months have passed since birth the probability of the obliteration of the sac by means of the pressure of a truss is very small indeed. Even in young infants when a truss is employed, should the bowel only come down once the benefit of the use of the truss for weeks may be destroyed and all chance of a real cure of the hernia be removed. Even when the employment of a truss does result in the permanent disappearance of the hernia with complete obliteration of the sac it is probable, as Mr. CLOGG suggests, that the truss takes no active part in the closure of the sac but merely permits that closure by preventing the descent of the bowel. For the past three years he has abandoned the use of a truss for inguinal hernia in children except in special cases, and even when he uses a truss he always warns the parents "that the truss will not cure the rupture." He holds that if a hernia has been seen after the first few weeks of life the only cure is by operation.

If, then, an operation is essential for all but the very early cases the question arises, At what age should it be done? Mr. CLOGG'S answer is that the earlier these cases are operated upon the better; he maintains that infants after the third or fourth month bear the operation well and make a very satisfactory recovery from it, and this is the age at which he recommends it unless it entails weaning of the

infant. In hospital practice an operation at this early age would almost certainly mean weaning but in private practice it need not do so. Should the child be weaned to allow of the performance of the operation it is essential that he or she should be allowed to become accustomed to the artificial food before being submitted to operation. In some cases it may be advisable to operate even before the fourth month, as when strangulation has occurred or has threatened, or when the hernia cannot be kept up by a truss. The operation itself has some peculiarities. The various tissues are more difficult to recognise than in the adult and the smallness of the structures also renders the operation difficult. To expose the deep inguinal ring the external oblique has to be divided for a short distance. When the sac is of the partial funicular form it is isolated and ligatured at the internal ring. When the sac is of the total funicular type it is divided where convenient and the upper portion is dealt with as already mentioned but no attempt is made to close the lower portion which is in connexion with the testis. In most cases the inguinal canal is closed by a couple of sutures which fasten the internal oblique to Poupart's ligament. The cut margins of the external oblique are united and the wound is closed. The results obtained have been good. No fatal case occurred; suppuration was present in six cases; in one of these the operation was done for strangulation and in several of the others there was some reason for the appearance of suppuration. It was not possible to see the after results in all cases but in those that could be traced the result was perfect, there being no recurrence in any case. We have devoted some space to a consideration of Mr. CLOGG'S article, for it embraces all the points of importance in a subject of widespread interest to the medical profession.

The Medical Officer of the Local Government Board: a New Appointment.

THE announcement made at the end of last week that the post of Medical Officer of the Local Government Board had been relinquished by Mr. WILLIAM HENRY POWER and that Mr. JOHN BURNS had filled the vacancy by the appointment of Dr. ARTHUR NEWSHOLME has come somewhat unexpectedly. It was not generally realised that Mr. POWER had reached the age, 65 years, at which retirement from office follows under Civil Service rules; and his successor would have been looked for naturally among the many distinguished members of the medical staff of the Local Government Board. Dr. NEWSHOLME will bring to his new duties an ability and industry which are universally recognised and have been manifested in many fields of work, especially in his numerous contributions to vital statistics, the prevention of pulmonary tuberculosis, and domestic and educational hygiene. Many of these contributions have appeared in our pages, so that we know their value to the medical profession. He has presided over or organised with conspicuous success the work of many public health societies and congresses; he has edited *Public Health* and the *Journal of Hygiene;* for many years he has ably filled the office of medical officer of health of Brighton, and he has there trained many of the younger generation of health officers. The Government appointment, which he has been called upon to accept, may fairly be described as alike the highest and the most onerous of any in the public health service of the country and is as exacting as any Civil Service appointment of the first rank. We wish him success in his new vocation and are certain that he will find himself loyally served by those over whom he has been placed.

In his book "English Sanitary Institutions" Sir JOHN SIMON, the first man called to the office, has given an account of the beginning and subsequent progress of the service for which the Medical Officer of the Local Government Board is responsible. From these writings it is possible to form some estimate of the task which that officer has to undertake and of the difficulties with which he has to contend in striving for the advancement of sanitary science and of sound and well-considered methods of sanitary administration. Large conceptions of the part to be played by medical considerations, in the wider sense of the term, in the proper government of the country received little sympathy or practical encouragement from the Minister chiefly concerned with the early organisation of the Local Government Board. Even in comparatively simple matters of administration the initial constitution of that Board, with its multifarious detailed functions in connexion with Poor-law and other matters to which priority of attention was given, formed a dead weight against which SIMON decided that it was hopeless for him to strive—in fact, he has himself told us that he resigned because he considered himself defeated in his proper policy. In the leisure of after years, however, SIMON was able to bear testimony to the steady headway in many of the directions which he had advocated made by his successors, notably by Sir G. BUCHANAN, Sir R. THORNE-THORNE, and Mr. POWER. In part, no doubt, the increasing influence of successive medical officers has been a natural result of the way in which people have now come to demand measures to protect the public health and of the greater readiness of Ministers to see advantage in doing something, or in professing to do something, to meet this demand. But, on the other hand, the central administrative machine to which the chief medical adviser of the State is attached has continued year by year to take on new duties unconnected with public health and to add to its initial cumbrousness, while the reluctance of Ministers seriously to take up and to push through any bold or comprehensive scheme of public health administration or legislation which entails Parliamentary opposition has become more and more obvious in recent Parliaments. The Local Government Board and its medical department may properly be credited with much sanitary administrative work which is good so far as it goes, but it would be interesting to know how many schemes of constructive sanitary policy in matters both large and small, which have entailed endless inquiry and work by SIMON'S successors, could be unearthed from the Board's pigeon-holes.

It is more profitable to turn to that part of the work of the Medical Officer of the Local Government Board which is disclosed to the public in the series of annual volumes and special reports from the medical department. These volumes are systematically reviewed in our columns and are well known to all sanitarians. The Medical Officer has the duty of acting as expert adviser to certain other

departments of State, notably in connexion with foreign and colonial affairs. The department supervises, by inspections at English ports and otherwise, the system of dealing with exotic diseases, such as cholera and plague, and the work done has brought much credit to British administration abroad and has enabled British representatives to take an important position in successive international sanitary conferences. It is hardly necessary to refer to the results of special inquiries made by the department year by year into conditions of disease prevalence throughout the country; the Medical Officer's publications may be said to have contained many, if not most, of the principal contributions which have been made to the modern science of preventive medicine in England. The work published in these reports under the heading of "auxiliary scientific investigations" comprises bacteriological, physical, and chemical inquiries of a very high order, usually on subjects requiring prolonged research of the sort which would hardly be attempted by anyone in the absence of the facilities given by the department. Present knowledge of, among other things, the bacteriology of scarlet fever and streptococcal infections, of the production of lead poisoning by moorland water-supplies, of the bacteriology of polluted soil, and of the penetration of disinfectant gases, for example, is largely based on these investigations. Many other examples could, of course, be given from the publications of the Medical Department of the Local Government Board and all would show the high standard of scientific and administrative work of the department, which during the last eight years has been fully maintained by Mr. POWER in his capacity of medical officer. It is now nearly 30 years since Mr. POWER, as an inspector of the Board, began the brilliant series of investigations regarding the spread of different infectious diseases which have since become classic. Long before his appointment to the principal post he had already undertaken the direction of the "field work" and auxiliary scientific investigations of his department. His judgment and sound scientific insight have been always freely put at the disposal of all who wished to consult him. His late chief, Sir R. THORNE-THORNE, described him as the "greatest living epidemiologist" and we know no one likely to dispute the title. At the end of his official activities and of the administrative career of the strong man who has "done his work and held his peace," Mr. POWER can look back on services to science and to the State which it is given to few men in any country to achieve.

TUCKER v. WAKLEY AND ANOTHER.

THE action brought by Mr. AUGUSTUS Q. TUCKER against THE LANCET resulted in damages of £1000 being given to the plaintiff. A stay of execution was granted. Many matters of the first importance affecting as much the public as the medical profession were touched upon in the course of the four days' trial, and we shall probably consider it our duty to publish a full report of the case.

BRISTOL ROYAL INFIRMARY.—It has been proposed to endow a bed in the Bristol Royal Infirmary to the memory of the late Mr. C. J. King, a well-known Bristol merchant. The sum required is £1200 and of this amount £929 have been already received.

Annotations.

"Ne quid nimis."

THE ADMISSION OF WOMEN TO THE EXAMINATIONS OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON AND THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE proceedings at the Extraordinary Comitia of the Royal College of Physicians of London held on Friday last, Jan. 17th, have taken the advocates for the admission of women to the examinations of the English Colleges one step nearer their aim, but the whole question is still in considerable confusion. We need not go into the back history of the matter; it is sufficient to state that the present position is as follows. Petitions have been presented from the London School of Medicine for Women to both Colleges asking that women may be admitted to the examinations of the Colleges. The Council of the Royal College of Surgeons of England agreed to admit women to the examinations for the Membership only, the Fellowship being reserved for men; but the Council undertook before coming to a final decision to submit the matter to the Fellows and Members of the College, as was only right, seeing how drastic a change in constitution was contemplated. We presume that in the case of a distinct expression of opinion from the constituency the governing body of the College will alter its view, but pending the result of the plebiscite the Royal College of Surgeons of England is willing to give its Membership to women. The Comitia of the Royal College of Physicians of London, which is, of course, a far larger body and more representative of corporate views than the Council of the Royal College of Surgeons of England, has now made its reply to the petition of the London School of Medicine for Women. The Comitia has passed a resolution to admit women to all the examinations of its College, but the effect of this resolution is considerably minimised by the adoption of the rider of the registrar, Dr. E. Liveing, that it is not intended that any action should be taken under the resolution inconsistent with that agreement between the Royal College of Physicians of London and the Royal College of Surgeons of England by which the Licence of the former and the Membership of the latter are only granted conjointly. It would seem, then, that if the vote of the Fellows and Members of the Royal College of Surgeons of England should be against the admission of women to the examination for the Membership of that College women might still be prevented from being examined for the Licence of the Royal College of Physicians of London; they might, however, be able to sit for the Membership of that College. We conclude as we began—the whole question is in considerable confusion.

"RES MEDICA, RES PUBLICA."

THOSE of our readers who remember the interesting and suggestive address delivered at St. George's Hospital in October last by Dr. William Ewart will welcome its publication in pamphlet form by Messrs. Baillière, Tindall, and Cox. Dr. Ewart completely emancipated himself from timeworn first of October topics and addressed himself to a consideration of some of the most pressing of the economic evils against which the medical profession, as a whole, is called upon to contend. Of some of these evils and of the roots from which they spring he submitted a graphic description to his hearers, and he discussed in some detail the most serious of the causes which interfere with the due recognition and the due remuneration of

medical work by the public. He dwelt also upon the remedies which might be applied to conditions which all must deplore and laid his chief stress upon a higher standard of medical education and examination, to be controlled by the State, and upon a recognition of the fact that medical services, which were formerly rendered chiefly or exclusively to individuals suffering from disease or accident, will for the future in constantly increasing proportion be rendered to the public for the prevention of illness rather than for its cure. He called attention to the example set by Harvard University in refusing its medical qualifications to students who had not graduated in Arts and set aside the question of any individual grievances thence arising as being absolutely unimportant when compared with the consequent elevation of the medical calling. It would, he declared, be an iniquity to keep a whole profession in suffering by widening the portals for one or two, otherwise able, who happen to lack aptitude for drawing, for spelling, or for Greek, or who have been misguided in their early education; and he is evidently of opinion that the necessary standards can only be maintained and the necessary restrictions enforced by taking the business of examination out of the hands of competing corporations and by committing it to the State. We cannot leave the pamphlet without calling attention to the *curiosa felicitas* of its concluding sentence. Dr. Ewart says of Thomas Young, one of the great worthies of the school of St. George's, that he "counted the waves of ether and made the Pharaohs speak."

THE ADMINISTRATION OF THE INFANT LIFE PROTECTION ACT.

AT the time of the enactment of the amended Infant Life Protection Bill of 1897, which came into operation in the following year, we wrote[1]: "Excellent as its provisions are, their value is materially diminished by defects in the Act which must very seriously diminish its utility. One of these consists in the exclusion of single nurse children from the Act, the other is the exemption of children for whose maintenance a sum exceeding £20 has been paid. The effect of these omissions is obvious. ..... The unregistered crèche if broken up into its constituent units may still continue to flourish unobserved by the eye of authority. Nurse children, as is well known, are usually illegitimate. They are, as a rule, not desired by their parents. If they should be committed to the keeping of unscrupulous persons one by one, the law is no longer responsible for their safety, which must therefore be at best an unknown quantity." The opinion which we thus strongly expressed has not lacked support, as is shown by the fact that a further Amendment Bill has been introduced and obstructed in the House of Commons in each year since 1901. Meanwhile evidence of the urgency of the amendments continues to accumulate. Such a piece of evidence is before us in the shape of the tenth annual report of Miss Frances Zanetti who is inspector under the Act to the Chorlton union. She had made visits to various cases in which a single child was being reared by foster-parents for a small weekly payment. This she had little difficulty in doing where the child was being properly looked after, although the foster-parents knew that she had no legal right of entry. Where her visits were unwelcome she invariably found that there was something suspicious about the case. Two of the cases which she visited under the Act were sufficiently serious to be reported to the National Society for the Prevention of Cruelty to Children. One of these was of a terrible nature—that of a wasted baby who was found to be the fourth illegitimate child of a mother, 22 years old, who had been taken home intoxicated the night before the baby was born, and since its removal to hospital had been sent to prison for six months for prostitution. It seems a moot point whether an asylum for the insane would not be a more suitable place for this poor creature. Miss Zanetti gives an analysis of 21 cases which she visited under the Act, in which 54 children were being tended by foster-parents for sums ranging from about 3*s*. to 7*s*. weekly. Besides these she visited 43 cases which did not come within the provisions of the Act. We hope that many more inspectors take so liberal a view of their duties but it ought not to be left to the good-will of these officers and the consent of the foster-parents for "one child" cases to be visited. It is satisfactory to record that a deputation to the Home Office of the Poor Law Unions' Association has been informed by Mr. Herbert Samuel, M.P., that the amendment of the Infant Life Protection Act is to be included in the "Children's Bill" which is to be introduced next session. In a matter of common humanity, such as this is undoubtedly, we trust that it will be found possible to bury the party hatchet for the short space of time that would be required to pass it into the statute book. The sacrifice of Bills framed in the urgent interest of national hygiene to the idol of party feuds takes place with monotonous regularity—we need only instance the smothering of the Pure Milk Bill of 1907—but when it is a matter of the safeguarding of young children against cruelty and what may almost amount to slow murder by neglect we fancy most politicians would seek to alter the law if they were thoroughly aware of the evils which its present imperfect state tacitly allows.

[1] THE LANCET, Sept. 11th, 1897, p. 675.

TEMPORARY GASTROSTOMY IN THE TREATMENT OF PERFORATION OF THE STOMACH AND DUODENUM.

IN the *Northumberland and Durham Medical Journal* for December last Mr. W. G. Richardson has described an ingenious modification of the treatment of perforation of the stomach or duodenum in cases usually considered hopeless. If perforation of a gastric or duodenal ulcer occurs the peritoneal cavity is generally flooded with the contents of the stomach and death will follow if the patient is not relieved by operation. When the patient has recovered from the shock there is, as Mr. Richardson points out, a good prospect of recovery if an operation be performed within from six to nine hours, but after nine hours the prospect is almost hopeless. In the latter class of cases the patients are nearly dead when seen by the surgeon. The usual treatment is to open the abdomen, suture the perforation, and thoroughly wash out and close the abdomen. Sometimes drainage-tubes are placed in the flanks and pelvis. After the operation thirst is insatiable and is allayed by giving sips of water, generally warm. Nutriment is supplied in the form of enemata. Four years ago Mr. Richardson adopted the following method. If the perforation is on the anterior surface of the stomach he passes a large indiarubber catheter through it and secures the catheter in position by a surrounding purse-string suture. The catheter is passed carefully into the cardiac portion of the stomach—a point of great importance, as otherwise the stomach cannot be emptied. The operation is completed in the ordinary manner, with the exception that the stomach is sewn to the incision in the middle line as in a case of gastrostomy. Before the patient leaves the table his stomach is washed out with hot bicarbonate of sodium solution by placing a funnel in the end of the catheter and pouring in the solution. When nearly a pint has been introduced the funnel is lowered over the patient's side and the fluid siphons out. This is repeated until the fluid returns quite clear. After being put to bed the patient begins to cry out for water and is allowed to take it in large quantities. Mr. Richardson gives cold water because it is this alone for

which the patient craves. If so much water is taken that the stomach becomes distended the catheter forms a perfect safety valve through which the stomach can be emptied at once. Thus the most urgent symptom following the operation can be relieved with safety and what is evidently a want of nature supplied. With regard to food, Mr. Richardson considers nutrient enemata as a poor substitute for food absorbed by the proper organs. When the ulcer is closed in the ordinary manner the surgeon dare not feed the patient by the mouth because after the operation its functions, like those of any injured organ, are impaired and it can only partially digest food. Thus food, if given, would accumulate, ferment, and do great harm unless removed by a stomach-pump—a dangerous operation in the circumstances. Therefore nutrient enemata have to be relied upon. By making use of the ulcer as a gastrostomy opening Mr. Richardson claims that the danger of feeding by the stomach is removed and at the same time an amount of nourishment is given, which could not be given by the rectum. He feeds the patient by the mouth every four hours with beef-tea and milk. Thus the pleasure and stimulation arising from the act of swallowing are preserved. Before each feeding the stomach is washed out with a solution of bicarbonate of sodium, so that what remains of the previous meal is removed. Moreover, the patient is not disturbed as when enemata are given but, on the contrary, is afforded great comfort. The washing out with bicarbonate of sodium is so comforting that the patients often ask the nurse to repeat it. After four or five days, when the patient is seen to be on the road to recovery, the catheter is withdrawn. The opening closes immediately, no leakage takes place, and no hernia follows. Mr. Richardson's experience of this method is encouraging but not yet sufficient to furnish statistics as to its advantages.

AN ORGANIC SERUM FOR THE TREATMENT OF SYPHILIS.

THE official bulletin of the Society of Biology of Paris in its account of the proceedings of a meeting held on Dec. 21st, 1907, gives a paper by Professor Hallopeau, physician to the Hospital of St. Louis and a Member of the Academy of Medicine. The paper dealt with the results obtained in syphilitic patients under the care of Professor Hallopeau by the use of an organic serum prepared by Dr. Quéry who in a paper read before the society on March 9th last gave as his conclusion that the pathogenic agent of syphilis was a bacillus which reproduces itself by spores and of which the spirillum of Schaudinn is an involutionary form. Confirmatory evidence of the truth of this theory has since been obtained by Leuriaux and Geest, Bertarelli and Volpino, Benda, Krzyzstalowicz, and Siedlecki. The isolation of the bacillus in question has enabled Dr. Quéry to prepare an organic antisyphilitic serum which is prepared and used after the same method as the well-known antidiphtheritic serum. Professor Hallopeau mentioned that 20 cases had been treated with the serum and that a progressive improvement had been observed in every one of them. To use his own words: "The ameliorations observed should not be laid to the account of the normal evolution of the disease, for I have noted them as taking place from the very beginning of the secondary symptoms and they therefore indicate a definite action of the serum upon the evolution of the disease. As to whether the ameliorations will be lasting, my studies in the question are at present too recent to give a definite answer." Dr. Quéry in a note which he has sent to us allows that at present the word "cure" should not be employed with regard to the action of the serum upon syphilis, but he has had under his personal notice certain patients who were treated four years ago and in whom there has been no apparent relapse. Professor Hallopeau concludes his paper by saying that the serum should be used in association with atoxyl or mercury and iodide of potassium. There is no incompatibility between the treatments and it is necessary to make use of every available weapon against such a resourceful enemy as syphilis.

AN AUSTRIAN PROFESSOR'S REMINISCENCES.

Professor Moritz Benedikt of Vienna has published his reminiscences in a lengthy but interesting volume.[1] Born in 1835 in Eisenstadt in Odenburg, now known by its Hungarian name of Kis-Márton, his childhood was passed under the feudal and autocratic *régime* which then ruled in Austria, his boyhood during the stirring times of the revolution, while during his student career at Vienna the university of that city owned some of the greatest names in its history. A man of wide interests, not confined to purely professional subjects but embracing literature, art, politics, and music, he has been also through two military campaigns, those of 1859 and 1866, and has travelled widely in most of the European countries, and having in the course of his long and active life met many notable personalities on more or less intimate terms he has a great many interesting reminiscences to record. His descriptions of his early school days and of his later studies at the gymnasium or high school afford noteworthy pictures of the educational methods of the first half of the nineteenth century in Austria. During the time when he was at the gymnasium at Vienna, between 1845 and 1853, the revolution occurred, and he has various anecdotes of those troubled times to relate. Apparently of studious habits from early in his life, he studied languages assiduously and acquired a considerable knowledge of the literature of Greece, England, and France, as well as of the writings of German poets and historians. Of the Greeks he liked best Homer, Sophocles, Euripides, and Demosthenes. In English he read widely. He states that Shakespeare was his poetical and psychological bible, and in his anxiety to read his works in the original he bought a copy of "Macbeth" after taking a few English lessons and looked out over 300 words in the dictionary, writing their meaning beside the text in shorthand. By reading this play through several times he so increased his vocabulary that he was able to read the other plays without any conspicuous difficulty. He naturally had a great affection for Goethe and Schiller and writes most appreciatively of Grillparzer and Kleist. Heine he regards as the greatest lyrist since the Psalmist. A most pleasing section of Professor Benedikt's book is that devoted to his years as a student at the University of Vienna. His brief character sketches of some of the distinguished professors under whom he studied serve to bring before us very clearly some of the men who helped to give Vienna its great reputation as a medical centre. Among these we may mention Hyrtl, Brücke, Rokitansky, Skoda, Arlt, and Oppolzer. He also came into relation with Semmelweis, whose tragic story he refers to in feeling terms, and was intimate with Hebra and Karl Ludwig. Hyrtl possessed remarkable abilities as a lecturer and in the preparation of anatomical specimens. Benedikt describes him as an artist in all that he undertook. He was very popular among his students but not among his professorial colleagues. Brücke is represented as a man of somewhat cynical, unattractive personality whose lectures were often beyond the scope of his audience. In spite of these characteristics and of his severity at examinations, he seems to have acquired the respect of his students. Of Rokitansky, Benedikt writes with enthusiasm and extols his pioneer work in pathology. He was not a great lecturer but was a most thorough and illuminating worker.

[1] Aus Meinem Leben Erinnerungen und Erörterungen, von Dr. Moritz Benedikt. Vienna: Ernst Stulpnägel. 1906.

Skoda and Oppolzer, both great men, are placed in a certain antithesis to one another: the former as a great thinker and pioneer, the latter as a fascinating personality and a successful practitioner; the one teaching the student to observe and to think, the other to apply his knowledge practically. Oppolzer's clinic was a favourite resort for the students; he seems to have been a highly instructive teacher. A great impressionist, he observed rapidly and arranged his facts with the utmost certainty. He was, moreover, extremely fertile in suggestions for treatment. Professor Benedikt describes also his experiences at the wars, and his subsequent appointment at Vienna, his work upon electro-therapeutics, upon the medico-legal relations of insanity, and upon ophthalmology and diseases of the nervous system. He travelled in Italy, Sicily, France, Turkey, Russia, Scandinavia, Holland, Spain, and Great Britain, and of all the places he visited he has much of interest to relate. Of Great Britain he seems to retain most pleasant memories and he confesses that his preconceived notions of our country and ourselves he had to modify after his visits. Our great national collections filled him with wonder and admiration. For our various monuments and fountains in public places he has much praise and he mentions in particular the Albert Memorial in London, the Walter Scott monument in Edinburgh, that of O'Connell in Dublin, and the Knox statue in Glasgow. He acquits us of the hypocrisy with which continental nations are fond of accusing us. He commends the English manner of writing scientific papers and confesses to having taken Faraday as his model. He thinks that English scientific men can differ with less rancour than those of some other nations and that they are more inclined to wait for evidence before embracing novelties. Professor Benedikt's book is written in an easy, chatty style and makes most interesting reading. He is evidently a man of strong opinions, but sincere and earnest, and can point to a life of good and active work.

THE BARNSLEY DISASTER.

A HEARTRENDING catastrophe occurred on Jan. 11th at Barnsley, resulting in the death of 16 young children. The Public Hall, Barnsley, had been rented by the World's Kinematograph Company for a series of entertainments and a special matinée had been arranged for Saturday, Jan. 11th, at very low rates of admission, the charge for a gallery ticket being only 1*d*. Apparently over 1000 persons, nearly all children, applied for admission to the gallery, the seating accommodation of which is 400 adults. When some 433 children had been admitted and children were still mounting the stairs some one apparently at the top of the stairs turned the children back and they were given the idea that they would be admitted to the pit. The children thus trying to descend the stairs got jammed with those trying to come up, some of them fell, and in a few moments there was a heap of struggling children. As a result 16 were killed and some 30 others more or less seriously injured. At the inquest, which was concluded on Jan. 17th, the jury found that the children were suffocated through negligence in not providing sufficient staff to regulate the children on the staircase, this resulting in a stampede of children on their being turned back. The foreman added that the jury did not think the negligence criminal or that the construction of the staircase was in any way answerable. There is no need to insist upon the horror which such a disaster inspires. It is a comfort to know that the construction of the staircase does not seem to have been faulty and the blame, if blame can be attributed to anyone, must lie first with those who seem to have allowed their children to go without proper escort, and secondly with the authorities of the entertainment in not seeing that there were sufficient persons to regulate the entry of would-be sightseers. Of the 16 children who were killed 10 were under seven years of age, the eldest was only 11 years old, and the youngest was four. Apparently most of the children who went to the show were in charge of other children aged as a rule about 12 or 13 years, and at least two of the children who were killed were in charge of other children aged 12 years. We are quite aware of the difficulty which the working classes experience in looking after their houses and their children too. Mere babies may be seen any day of the week wandering about the London streets and in and out of the traffic, and it is a perpetual marvel that there are not more lives lost than there are. But if the sad occurrence upon which we write will bring home the responsibilities to those who have the charge of children the 16 little Barnsley victims will not have yielded their lives in vain.

DISSEMINATION OF ENTERIC FEVER DUE TO A "TYPHOID CARRIER."

FOR several months medical authorities have been puzzled by outbreaks of enteric fever in a large institution on the outskirts of Bristol—the Brentry Home for Inebriates. 28 cases have arisen and the circumstances have been so peculiar that the medical officer of health of Bristol, Dr. D. S. Davies, suspected that the cause of the infection must be an unsuspected "bacillus carrier" capable of conveying infection to others though not suffering from the disease. His view has been justified by investigation, the source of the repeated attacks at Brentry having been traced to a woman in the institution who has not recently suffered from enteric fever but who has shown herself an effective disseminator of the typhoid bacillus. To the Bristol health committee recently Dr. Davies made a special report on the case. It is as follows:—

> In consequence of a continuing outbreak of enteric fever at this institution, which led to 23 cases and two deaths between September, 1906, and November, 1907, and as the infection was being introduced into the Bristol district, and part of the institution is within the city, I took up the investigation of the cause in November, as every effort on ordinary lines up to that time had failed to account for, or to stop, the spread of the disease. As I advised the chairman on Nov. 13th, the circumstances, judged from quite recent pathological work in Germany, seemed to me to point to the existence of a "carrier" case of chronic typhoid who was intermittently but unconsciously infecting the food or milk. Acting in conjunction with the Home Office medical inspector, I instituted a special pathological inquiry into the condition of certain inmates, and late in December the inquiry proved that one of those to whom the circumstantial evidence had pointed was undoubtedly a typhoid "carrier." This case had been tentatively isolated on Nov. 13th and I ventured to predict that no further cases would occur beyond the next incubation period. The last case was on Nov. 24th, and from then till now the institution has remained free. This new chapter in the history of typhoid infection is of immense importance, as we now have the key to many of these intermittent or dropping outbreaks which have hitherto defied explanation. Beyond the German cases, one in New York and one in Scotland, I am unaware of any other successful investigation of typhoid outbreaks on this line of research.

Mr. C. Wintle, the chairman of the health committee, congratulated Dr. Davies on his success in making this important discovery, and Dr. Davies, in reply, said that the matter was engaging the attention of a special department of the Local Government Board. The discovery that a certain proportion of those who have suffered from enteric fever may continue to harbour bacilli and to discharge them intermittently from the body long after the actual convalescence is one of great importance in regard to the spread of the disease, since it has now been definitely proved that such cases may be the unsuspected sources of widespread infection. The recognition and adequate treatment of such persons, to whom the name of "typhoid carriers" has been applied, is obviously a matter of great practical importance. A considerable amount of research has been carried out on this subject in Strasburg under the auspices of the German Imperial Board of Health by Kayser,[1] to whom is due the

[1] Arbeiten aus dem Kaiserlichen Gesundheitsamte, Band xxv., Heft 1, 1907.

credit of drawing attention to these cases and their importance as centres of infection. He states that 93 per cent. of persons convalescent from enteric fever do not discharge typhoid bacilli in the stools after the fifteenth day from the time when the temperature has fallen to normal, and further that of the remainder many soon cease to harbour the bacilli, leaving about 3 per cent. of carriers. Klinger after examining the stools of a large number of cases of persons who had suffered from enteric fever found that only 1·7 per cent. became chronic "typhoid carriers," a smaller percentage than that found by Kayser but the result of a more extended examination. From the intermittent character of the discharge of bacilli by these "typhoid carriers" in the fæces it is suggested that it is in the gall-bladder that the organisms live and multiply. It is well known that bile is a good culture medium for them, that they are not infrequently found in gall-stones, and Dehler has treated cases of "typhoid carriers" by draining the gall-bladder, after which operation the bacilli disappeared in the course of a few months. That the bacilli may also remain in other situations for long periods is proved by the case recorded by Mr. L. S. Dudgeon and Dr. R. E. G. Gray[2] in which typhoid bacilli were recovered from bone lesions three and a half years after an attack of enteric fever. In an annotation[3] commenting upon the case we pointed out the necessity for dealing effectively with all the discharges from patients suffering from that disease. The question of the recognition of these cases is obviously one of importance and Kayser suggests that the stools and urine of convalescent cases of enteric fever should be examined at intervals of a fortnight and three weeks after the temperature has fallen, and if these examinations prove negative a third trial should be made after several months. If any one of the three gives a positive result the examination should be repeated at weekly intervals until three consecutive negative results are obtained. He also recommends that known "typhoid carriers" should be kept under bacteriological supervision. Even by such drastic methods it is not possible to be certain of discovering all the cases, and it is obvious that if such a rigorous control is to be kept over the patients who have suffered from enteric fever it is quite beyond the province of the ordinary practitioner and must come under the control of the health authorities. An equally difficult problem is offered in the treatment of these cases. Being apparently in perfect health they are not likely to submit to treatment by antiseptics or to the more drastic surgical procedure adopted by Dehler, even if these methods are found to be effective. At present all that can be done is to discover them and to prevent them from becoming sources of infection, as the instance above quoted shows.

THE TRAFFIC IN OLD HORSES.

THERE are certain offences against humanity and civilisation to which we are obliged periodically to refer and the brutalities incidental to the shipment of old and worn-out horses have been brought before our readers on many previous occasions. The latest case of this kind of which we have knowledge occupied the attention of Mr. Biron at Old-street police court on Jan. 16th when a man named Spratt *alias* Sharpe was charged with cruelty to a horse by leading it in a lame condition through the streets under the Cruelty to Animals Act. The horse was, as usual, destined to be shipped abroad. We pointed out in THE LANCET of April 11th, 1903, p. 1045, that this is the only Act which covers the particular offence, for the Order of the Board of Agriculture issued at the beginning of 1899 to deal with the matter only stated that it should be unlawful to convey from any port in the British Isles to any place outside them "any horse which, owing to age, infirmity, illness, fatigue, or any other reason, cannot be so conveyed without cruelty during the intended passage and upon landing." In the present case it was proved that the man had been twice convicted of cruelty in the same connexion. Mr. Biron sentenced him to three months' hard labour after making some remarks such as we have frequently expressed in these columns.[1] He said that he could not understand why the people behind the men employed to take such poor things through the street were not proceeded against. The very shippers and people on the boats must know that they had been exposed to great cruelty to make them travel. The trade was shocking, disgusting, and horrible. He could only make an example of the prisoner as the police said that there were difficulties in the way of reaching the men who hired him, though he could not understand why. We cannot understand why, either. Surely it is desirable that legislation should render the export of old horses for foreign food a criminal offence and we urge on the present Government the expediency of bringing in a small Bill, which would probably become law with little controversy, to abolish entirely this traffic.

[2] THE LANCET, July 7th, 1906, p. 26.
[3] THE LANCET, July 7th, 1905, p. 38.

THE FOURTH INTERNATIONAL CONGRESS ON ELECTROLOGY AND RADIOLOGY.

THE Fourth International Congress on Electrology and Radiology will be held at Amsterdam from Sept. 1st to 5th, 1908. The results of the three former Congresses—at Paris in 1900, at Berlin in 1903, and at Milan in 1905—having proved their utility and importance, the Fourth Congress will be organised on the same lines. The programme will comprise electrophysiology and electropathology, electrodiagnostics and electrotherapeutics, diagnostics and therapeutics of roentgen rays, the study of diverse radiations, and medical electrotechnics. In conjunction with the Congress an exhibition will be arranged of new or modified apparatus used in clinical and laboratorial work and also a collection of important radiographs. The Congress and the exhibition will be held in the University of Amsterdam, the executive committee being Professor Dr. J. K. A. Wertheim Salomonson, president, and Dr. J. G. Gohl and Dr. F. S. Meijers general secretaries and treasurers. Further information can be obtained from the secretaries by addressing them at Vondelstraat 53, Amsterdam.

A CURIOUS ECONOMY.

THE *Daily Telegraph* of Jan. 10th prints a curious story of Post Office economy contributed by a correspondent. The General Post Office, it says, has ceased to supply "dampers" to the clerks for sorting papers quickly, the official reason being that "dampers cost money, and we already pay for the use of fingers." That is well enough but the department does not pay for the use of tongues for other purposes than talking. The clerks are apparently alive to this and have, according to our contemporary's informant, improvised dampers by doubling several sheets of blotting-paper together to avoid the necessity of licking their fingers for the work, with the result that the makeshift is likely to cost more than the proper appliance. If this story be correct we can only hope that the authorities will speedily restore the old dampers and will do everything in their power to discourage the habit of finger-licking. Not only is it dirty in itself but the fact that the same forms may be handled by the licked fingers of different men at a short interval makes it a possible source of infection. Tuberculosis is far from uncommon in the Post Office service and it is not unlikely that the sick-pay given to one man whose lungs became thus infected would go a long way towards the provision of dampers throughout the department. The principle, too, is a

[1] THE LANCET, April 13th, 1901, p. 1095, and April 11th, 1903, p. 1045.

thoroughly unsound one; what was good enough for our fathers is not good enough for us in matters of hygiene, seeing how much fuller is our knowledge of the importance of little things than was theirs, and in this instance apparently a Government department seeks to deprive its employees of a hygienic advantage which even their fathers enjoyed.

PLAGUE AT ACCRA.

THE following telegram from the Acting Governor of the Gold Coast was received at the Colonial Office on Jan. 15th: "Total number of deaths from plague up to midnight, 14th January, fifteen. Thirteen natives in Contagious Diseases Hospital and Isolation Camps, one death reported this morning. Garland (Deputy Principal Medical Officer) believes progress of plague effectively checked. Sufficient number of medical officers here. In order to get into closer touch with natives have authorised temporary employment of Papafio, retired medical officer, Bruce, native medical practitioner, also Fisch, German doctor of some scientific attainments. There are now six doctors available at Accra. Large number of dead rats has been observed, Accra; every endeavour has been made from the beginning to exterminate rodents." The Secretary of State for the Colonies has appointed Dr. W. J. R. Simpson, professor of hygiene at King's College, London, and lecturer in tropical hygiene at the London School of Tropical Medicine, to proceed to the Gold Coast to assist in combating the present outbreak of bubonic plague at Accra. He left for the Gold Coast by the steamship *Mendi* on Jan. 18th and was accompanied by Dr. J. A. Haran of the medical service of the East Africa Protectorate, who has been selected on account of his experience in dealing with plague in that dependency. Dr. Simpson's mission to Accra shows that the Government wishes to leave nothing undone that can possibly be of service to our Gold Coast Dependency but implies no want of confidence in the ability of the medical staff now on the spot. Dr. Simpson will probably also visit other towns in West Africa with a view to advising in regard to questions of sanitation. Since his departure two official telegrams have been received at the Colonial Office showing that on Jan. 20th six, and on Jan. 21st two, deaths occurred from bubonic plague. On the latter date the return shows 48 cases isolated.

UNCERTIFIED CAUSES OF DEATH IN 1907.

ALTHOUGH successive Governments have failed to take any action for giving effect to the recommendations made in the report issued by Sir Walter Foster's Committee in 1892 on the Certification of Causes of Death the number and proportion of uncertified deaths in England and Wales have since then constantly declined under the influence of the attention given to the subject in the reports of the Registrar-General and of the local medical officers of health. In the last issued annual report of the Registrar-General (1905) it was shown that the proportion of uncertified deaths steadily declined from 1·81 per cent. in 1900 to 1·62 in 1905; his quarterly returns for 1906 showed a further decline to 1·53, and during the first three quarters of 1907 the percentage of uncertified causes of death did not exceed 1·44. The quarterly and weekly returns for 1907, moreover, enable us to consider and to compare the varying proportions of uncertified deaths in the 76 large English towns dealt with in those returns during 1907. The mean percentage of uncertified deaths in these 76 towns was 1·1 in 1904 and in 1905, 1·0 in 1906, and further declined to 0·9 in 1907. The mean proportion of uncertified deaths has thus been considerably lower in these 76 towns than the mean rate in the whole of England and Wales in each of the last four years, and it is satisfactory to note that the proportions continue to decline in the large towns as well as in the whole of England and Wales. It is, however, still more important that attention should be called to the wide variations in the reduced proportions of uncertified deaths still prevailing among these 76 towns. During 1907 all the causes of deaths registered in Croydon, Tottenham, Southampton, Wigan, Hornsey, Devonport, Ipswich, and Great Yarmouth were duly certified, and all but one of the causes of death registered during the year were duly certified in West Ham, Brighton, Walthamstow, Plymouth, and Bournemouth. In London the proportion of uncertified deaths last year did not exceed, as we recently pointed out, 1 per 1000 deaths registered, whereas the proportion had been equal to 2 per 1000 in each of the three preceding years. In many other of the 76 towns, however, there is still a marked excess of uncertified deaths, showing a want of appreciation of the importance of the due certification of all causes of death either by a registered medical practitioner who has been in attendance during the last illness of the deceased or by a coroner after inquest. The proportion of uncertified deaths during last year was equal to 2·7 per cent. of the deaths registered in Liverpool and in Bootle, to 2·8 per cent. in Sunderland and in Burton-on-Trent, 2·9 in Preston, 3·3 in Birmingham, 3·5 in St. Helens, 4·4 in Gateshead, 4·5 in Warrington, and 5·1 in South Shields. It would be useful as well as interesting to have some explanation of the fact that while it has been found possible to secure the due certification of all causes of death in the eight above-mentioned towns, and of all but 1 per 1000 in very many other towns, the proportion of uncertified deaths last year should have exceeded 27 per 1000 in the towns referred to above, ranging up to 51 per 1000 in South Shields. It is beyond question that even under the present legislative arrangements due coöperation between sanitary authorities, medical officers of health, and coroners would undoubtedly reduce the number of uncertified deaths to an inconsiderable minimum.

"IONIC MEDICATION."

IN addition to the discovery of new methods of treatment in medicine and surgery it is interesting to note how modern scientific ideas bring about the revival of an old method which, probably for the want of a better knowledge, had been allowed to fall into disuse. An instance of this is the local introduction of drugs through the unbroken skin with the aid of the electric current. This is generally known as cataphoresis, and the method is nearly as old as our knowledge of the electrolytic process itself. At one time it was employed to a considerable extent both at home and abroad, but it was not until Professor Leduc of Nantes brought his encyclopædic knowledge of electrolysis to bear on the subject that it received a more scientific foundation and a fresh lease of life. In the electrolysis of a normal saline solution there is a migration of ions; the basic (sodium) ions travel from the anode to the cathode, while the acid (chlorine) ions move from the cathode to the anode. This process is not stopped by the intervention of animal membrane or skin. As being more in harmony with modern ideas the method is sometimes spoken of as "ionic medication." As our knowledge and experience increase there is every probability that this principle will be employed in a gradually increasing degree. It has been found very useful, for instance, in the stiffness following a severe sprain of the ankle-joint: a pad wet with a watery solution of iodine was placed over the part and covered with a metal plate connected to the positive pole. Cases of trigeminal and supra-orbital neuralgia have been relieved by the similar use of quinine or salicylic acid after all other methods had failed. Local anæsthesia can be produced with a solution of cocaine. Small and superficial rodent ulcers are easily cured by anyone who has had a little experience. Here a solution of zinc chloride is used and the zinc ions are

driven into the surface of the ulcer which has been previously cleaned. If the ulcer is small and the application is carefully and thoroughly done, once only will be found sufficient to cause its disappearance. It is probable that it will be applied successfully in other conditions such as ringworm, and lupus vulgaris would appear to be one likely to be influenced favourably by the local introduction of some ion prejudicial to the life of the bacillus. There should also be a large field open to investigation in regard to its use in gouty and rheumatic deposits. Theoretically an objection to this method is that the substance introduced would be washed away by the circulation before it had penetrated very deeply. While this is no doubt true to a certain extent it is none the less true that the process at times enables a more pronounced local action to be produced of, say, iodine than is possible by the administration of iodides in the usual way.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: THE LECTURE ARRANGEMENTS FOR 1908.

THE annual course of lectures to be delivered at the Royal College of Surgeons of England will commence on Feb. 10th and will be continued on each Monday, Wednesday, and Friday until March 20th. The lecture hour will be 5 P.M. each day. Erasmus Wilson lectures: Mr. S. G. Shattock will deliver one lecture on Ovarian Teratomata on Feb. 10th; Dr. J. W. H. Eyre, one lecture on the importance (surgically) of the Pyogenetic Activities of Diplococcus Pneumoniæ on Feb. 12th; and Mr. L. S. Dudgeon, one lecture on Infection of the Urinary Tract due to Bacillus Coli, on Feb. 14th. Hunterian lectures: Dr. Victor Bonney will deliver three lectures on a Study of the Connective Tissues in Carcinoma and in Certain Pathological Conditions preceding its Onset, on Feb. 17th, 19th, and 21st; Mr. Donald J. Armour, three lectures on the Surgery of the Spinal Cord and its Membranes, on Feb. 24th, 26th, and 28th; Dr. F. C. Shrubsall, three lectures on the Physical Anthropology of the Pigmy and Negro Races of Africa, on March 2nd, 4th, and 6th; Mr. A. Ralph Thompson, two lectures on the Anatomy of the Long Bones relating to certain Fractures, on March 9th and 11th; and Mr. W. S. Handley, one lecture on the Natural Cure of Cancer, on March 13th. Arris and Gale lectures: Dr. F. A. Bainbridge will deliver one lecture on the Pathology of Acid Intoxication, on March 16th, and Mr. M. Greenwood, jun., two lectures on the Physiological and Pathological Effects which Follow Exposure to Compressed Air on March 18th and 20th.

THE LAHORE MEDICAL COLLEGE.

THERE is a quaint old saying or proverb to the effect that "Soft words butter no parsnips." Doubtless the apothegm is an onomatopoetic corruption of another in a different language, couched in more dignified terms and possibly possessing a different meaning, but be this as it may the modern meaning was well exemplified at the annual prize distribution of the Lahore Medical College which took place some days before Christmas. The Principal of the College, Colonel F. F. Perry, I.M.S., in his introductory speech said: "There is no need for me to emphasise the fact that medicine is a progressive science and that the teaching of medicine becomes daily more elaborate and complicated. I will not say that the Lahore Medical College and School have been so far *facile princeps* in India, but I think I can justly claim for them that they have been, and are, second to none. In order to maintain this position it is necessary that we should keep up with the times, and in order to do this improvements and changes are essential in the near future." It was not in this admirable little speech that the soft words which do not butter parsnips made their appearance; they became apparent at once in the reply of the Lieutenant-Governor of the Punjab, Sir Denzil Ibbetson. "I have always regarded," he said, "the diffusion of medical and surgical knowledge as one of the best things we have done in India, and one great advantage attaching to medical education in this country is that it stands absolutely apart from all political currents. I should like to see the work enormously extended. We have been told by Colonel Perry of the growth and development of the College in the last 50 years, but I should like to see five times the present number of students in attendance. I should like to see competent medical aid provided for every class of the population, and indeed for every individual who desires to avail himself of it, but if this is to be achieved we must mainly rely upon Indian agency for the expansion. What India particularly wants in this direction at present is not more official medical officers but more private medical practitioners. Trained young men in large numbers are wanted to set up in medical practice on their own account. The process has been begun ..... but I want to see more of the young men who come here to study and to qualify start while in their youth upon a career of private practice instead of fixing their aims upon official employ." So far so good. Nothing could be more admirable than the sentiments which Sir Denzil Ibbetson eloquently expresses. It is quite within the range of possibility that among his hearers there may have been some who looked forward with joy to an announcement that the purse-strings of the sympathetic Governor were about to be relaxed. If such there were they soon were sadly disillusioned. "Well now, gentlemen," continued the speaker, "Colonel Perry has told us of changes and improvements and has asked for my interest and sympathy. I promised him both in the fullest measure. ..... But, gentlemen, you are all well acquainted with the serious nature of the present financial situation. This is a lean year ..... there is practically no hope that the Government will be able to provide a large sum of money for improvements in this College during the present financial year, and probably not during the next financial year, but while I am obliged to say that let me also say that the proposed changes undoubtedly have my sympathy and interest, and that when the time comes I will do my best." These were soft words but it seems a pity that the leading medical college must be starved.

A TELEGRAM from the Acting Governor of the Gold Coast received at the Colonial Office on Jan. 18th states that on Jan. 17th there were 4 deaths from plague. The total number of natives in hospital is 9, while 41 are isolated. A further telegram states that on Jan. 18th there was 1 death from plague. 17 natives were in hospital and 41 were still isolated. The Department of Public Health for Queensland in a bulletin dated Dec. 14th, 1907, states that a case of plague at Cairns was reported on Nov. 23rd, 1907. The patient died on Nov. 30th. The case which occurred previously to this one at Cairns was reported on Oct. 8th, 1907.

THE MEDICAL INSPECTION OF SCHOOL CHILDREN.—At a meeting of the Taunton town council held on Jan. 14th it was decided to appoint Dr. H. J. Alford, the medical officer of health, to be medical inspector of the school children of Taunton at a commencing salary of £100 per annum.—A joint conference between representatives of the Monmouthshire education committee and the sanitary committee of the Monmouthshire county council was held at Newport on Jan. 17th to consider the question of the medical inspection of children attending the Monmouthshire schools. After some discussion it was decided to recommend the appointment of a chief medical officer with two assistants to carry out the work.

ANNUAL REPORT FOR 1906 OF THE MEDICAL OFFICER OF HEALTH OF THE ADMINISTRATIVE COUNTY OF LONDON.

I.

Sir Shirley F. Murphy's fifteenth annual report on the health of the metropolis has recently been published by order of the London County Council. The volume occupies, with appendices, 180 folio pages of closely printed matter and is illustrated throughout with a series of appropriate diagrams. Whilst closely following, in its general features, the lines of its predecessors the present report contains a large amount of important matter which now appears for the first time. To this additional matter more especially we propose to refer in detail. Nevertheless, as this report is written primarily for the benefit of Londoners, we shall endeavour, as far as space permits, to notice any serious deviations from the normal records of mortality in the metropolis, relating as they do to a population closely approaching 5,000,000 in number.

The ordinary statistics of marriages, births, and deaths in the metropolis have already been published in the annual summary of the Registrar-General. It is, however, worthy of more than passing notice that the mortality of London both in 1906 and in the year immediately preceding was the lowest hitherto recorded. It was only 15·1 in each 1000 persons living and was below the average rate in the closing decade of the nineteenth century by more than 20 per cent. The London death-rate in 1906 tallies closely with that of England and Wales, the difference in the rates amounting to no more than a few tenths of a unit per 1000. It is common knowledge that the mortality of dwellers in the several districts of the metropolis varies enormously. By calculating the comparative mortality figure for each of the 29 metropolitan boroughs, which now correspond to the administrative sanitary areas, the county medical officer of health gives exact numerical expression to these variations. From a table in the report we see that in the quinquennial period ending with 1905, 11 of the metropolitan boroughs had a mortality in excess and 18 a mortality in defect of the average for the administrative county as a whole. The table further shows that in 1906 the mortality in the poor and populous district of Finsbury was at least double of that in the more highly favoured and less populous district of Hampstead. Carrying still further his analysis, Sir Shirley Murphy tells us that among the 21,000 tenants of the dwellings for the working classes recently provided by the County Council for the accommodation of persons displaced by the removal of house property for street or sanitary improvements, the rate of mortality did not exceed 13·7 per 1000, a rate which may be considered a low one for even the healthy districts of the country, and which is less by 1·4 per 1000 than the present average rate for the metropolis.

In the year 1906 London mortality from the principal epidemic diseases (except diarrhœa) was below the average for the preceding decennium. Small-pox was notified in only 31 cases, all of which recovered. Of the cases reported, nine occurred in Hackney, six each in Bethnal Green and Camberwell, and smaller numbers in other metropolitan boroughs. During the year the services of Mr. W. McC. Wanklyn, of the County Council's Public Health Department, were required to assist in the diagnosis of 35 cases of suspected small-pox. These included a group of four patients and another group of three patients, all of whom were found to be suffering from genuine small-pox; a group of five patients suffering from chicken-pox, and another group of five cases affected not with small-pox or chicken-pox but with contagious skin diseases.

Among the common infectious diseases of children neither measles nor whooping-cough is included in the schedule of the London Notification Act. Nevertheless, these diseases give considerable trouble to sanitary as well as education authorities by reason of the interference which they cause with the regularity of school attendance. The relation of overcrowding to the prevalence of measles is well shown in the present report, from which we learn that the mortality from this disease is more than twice as great in districts where over 27½ per cent. of the dwellings are overcrowded as it is in districts where the overcrowding does not exceed 7½ per cent. The question of the possible reduction in fatality that might be attained by the better nursing at home of cases of measles is discussed by the county medical officer as well as by certain of his colleagues. Sir Shirley Murphy refers with approval to the good services rendered in Woolwich by the district nursing institution there, an institution that would probably be instrumental in saving many of the lives which in present circumstances are sacrificed to measles if only the sanitary authorities possessed, and utilised, the power to contribute to the expenses of the association so as to enable it to employ a sufficient staff to cope with local requirements. The county medical officer also discusses the question of school closure as an expedient for dealing with excessive incidence of measles among children of tender age; but although in the year 1906 not fewer than 52 classrooms and 15 "departments" were closed on account of the prevalence of measles, this expedient does not appear to have produced the results which might have been hoped for; this is attributed to the fact that "there is no satisfactory system by which a teacher becomes aware of the cause of absence of a pupil." There appears to be some indication that parents nowadays regard measles as a more serious malady than was formerly the case and that as a consequence a larger proportion of the cases, in certain districts at any rate, come under medical care.

In the behaviour of scarlet fever during 1906 there is little abnormal to notice. Both the case-rate and the death-rate of the administrative county corresponded nearly to the average, although, as usual, the incidence of attacks from scarlet fever varied widely in the several metropolitan districts. Almost the same statement may be made concerning diphtheria, except that the prevalence, as well as the fatality, of this disease showed a greater defect from the average than was observed in the case of scarlet fever. But with regard to diphtheria Sir Shirley Murphy gives an interesting account of the occurrence of outbreaks among school children, in many of the cases the Klebs-Löffler bacillus being detected. This account, which will be read with interest by all medical men engaged in practical sanitation, is too long for reproduction here and scarcely admits of condensation.

As regards the bacteriological examination of "contacts" with cases of diphtheria very interesting particulars are given in the present report. In certain districts the local medical officers of health have been able to secure that no "contact" should be allowed to return to school after illness from diphtheria except after bacteriological examination of the fauces. In this connexion the London County Council has adopted an important report and resolution submitted to it by its Education Committee, from which the following is an extract:—

> Our attention has been drawn to the difficulties which have arisen in districts where diphtheria has been prevalent, consequent upon children who have been excluded from school being certified as free from disease by medical practitioners. With the view, therefore, to dealing more thoroughly with the disease, the various medical officers of health were asked to adopt the temporary arrangements being carried out in Greenwich in the event of there being an outbreak of diphtheria in their respective districts. These arrangements involve that any children excluded from school on account of diphtheria or sore-throat during the prevalence of the disease should not be re-admitted without a certificate from the medical officer of health that they are free from infection. ..... We are of opinion that it would greatly strengthen the hands of the various medical officers and do much to reduce the present risks of infection if authority were given for the refusal, during the presence of diphtheria in any district, of the readmission of children excluded from school as suffering from diphtheria or sore-throat until they have obtained a medical certificate of freedom from infection based on a bacteriological examination. We are informed that such certificates can be given, either by general practitioners or by medical officers of health, and would be free from the dangerous errors of medical certificates given merely on the inspection of children.

The Education Committee, after carefully debating the subject, passed the following most important resolution, which, as we said before, was adopted by the County Council:—

> We recommend that the Education Committee be authorised to refuse, during the presence of diphtheria in any district, readmission to school of children excluded on account of diphtheria or sore-throat until such children shall have obtained a medical certificate of freedom from infection, based on a bacteriological examination.

In our opinion it is difficult to over-estimate the value of this far-seeing resolve on the part of the London County Council as the supreme educational authority. Probably no step could have been taken that would be more likely than this to check the spread of infection in elementary schools—that

is, of course, provided the action of the central authority receives the loyal support of the several borough councils.

Among the fevers formerly designated "continued," typhus fever appears to have caused no deaths in London during the year 1906; nevertheless, it is clear from the present report that were it not for the vigilance of the sanitary authorities we should still hear of extensive local epidemics of the disease from time to time. For instance, we learn that in the period referred to four cases of undoubted typhus fever occurred and were removed to hospital, one of which cases was notified as suffering from enteric fever and was apparently isolated as such.

The cases of enteric fever in the metropolis were equal to a rate of 0·3 per 1000 of the population in the year 1906, a rate which corresponds closely to that obtaining in the immediately preceding year. In the year first mentioned Finsbury had the highest death-rate from enteric fever and Chelsea and Stoke Newington the lowest. Of the cases notified to be suffering from enteric fever, we learn that "a portion was found, after inquiry by the medical officers of health, to be incorrectly diagnosed." With respect to those that were accepted as being actual cases of enteric fever, effort was made by medical officers of health to discover the cause of the illness. A considerable number of these were believed to have received infection from elsewhere, some of them having been infected on the continent, whither they had repaired for the summer holiday. Among articles of food believed to have been instrumental in conveying infection cockles are once again frequently mentioned in the reports of medical officers of health, Southend and Leigh-on-Sea being referred to as the source of some of these molluscs. Dr. C. Sanders of West Ham reports an outbreak of not fewer than 52 cases of enteric fever during 1906, a number of the persons attacked having been found by him to have eaten cockles a short time before the onset of the disease. After discussing the views of his colleagues as to the part played by cockles in the spread of infection, Sir Shirley Murphy pertinently remarks: "Whatever view is taken as to the sufficiency of the evidence incriminating the cockles in these outbreaks, the fact remains that the risk of consumption of cockles which have been laid in the Leigh Creek is now well recognised, and any further evidence of injury to London inhabitants from this source must necessarily raise question as to the steps which should be taken in dealing with this matter by public authorities of the localities whose inhabitants suffer in this manner."

(To be continued.)

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN extraordinary Comitia was held on Jan. 17th, Sir RICHARD DOUGLAS POWELL, Bart., K.C.V.O., the President, being in the chair.

The consideration of the petition from the London School of Medicine for Women praying for the admission of women to the examinations of the College and of the whole question involved was resumed. On the previous occasion a motion was proposed and seconded "that the petition of the London School of Medicine for Women be granted." To this an amendment had been carried "That it is desirable that such alterations be made in the by-laws as to allow the admission of women to the examination for the Licence only of the College." When this had been put as a substantive motion an amendment had been moved and seconded "that the word 'only' be omitted." This was discussed at some length and the amendment was eventually carried by a large majority. On this being put as a substantive motion a further amendment was proposed to the effect:

That it is desirable that such alterations be made in the by-laws as to allow the admission of women to the examinations of the College.

This was carried by 74 votes to 33.

The REGISTRAR (Dr. E. LIVEING) then moved a rider which was seconded by the SENIOR CENSOR (Dr. D. FERRIER) and carried *nemine contradicente*:—

That it is not intended that any action should be taken under the resolution just adopted inconsistent with the agreement between the two Royal Colleges under which the Licence of the one and the Membership of the other are only granted conjointly.

The following communications were received:—1. From the Secretary of the Royal College of Surgeons of England, two letters reporting proceedings of its Council on Nov. 14th and Dec. 12th last. 2. From the Marine Department of the Board of Trade, inclosing a letter from the Governor of St. Helena forwarding a report by Dr. J. J. W. Arnold, the Colonial surgeon, on the necessity of issuing further instructions respecting the treatment of beri-beri and asking the views of the College. The matter was referred to a committee consisting of the President, Sir W. S. Church, Dr. J. F. Payne, Sir Patrick Manson, and Professor R. T. Hewlett. 3. From the Royal Sanitary Institute, inviting the College to appoint delegates to the annual congress of the institute to be held at Cardiff, from July 13th to 18th next. It was resolved to appoint two delegates whose names would be announced at a future meeting. 4. From the Dean of the Faculty of Medicine of the University of Edinburgh, announcing the award of the Murchison scholarship (1907) to James Sutherland Edwards, M.B. Edin.

Sir Dyce Duckworth was re-elected a representative of the College on the Council of Queen Victoria's Institute for Nurses.

A report was received and adopted from the Committee of Management recommending that the Municipal Technical School, Accrington, should be added to the list of institutions recognised by the Examining Board in England for instruction in chemistry and physics.

The committee also recommended that the Borough of Devonport small-pox and fever hospitals should be added to the list of fever hospitals recognised by the Examining Board in England.

The PRESIDENT then dissolved the Comitia.

THE FUTURE OF THE MEDICAL PROFESSION: A FRENCH VIEW.

THE Students' Number of *Le Progrès Médical* for 1907, which was published at the end of the year, contains an article by M. J. Noir upon "The Future of the Medical Profession" which will be interesting to all of us. Our readers will remember that last year we published articles from our Special Commissioner entitled "The Organisation of the Medical Profession in France.[1]" We find that our French colleagues are called upon to deal with much the same difficulties in medical politics as have engaged the attention of the profession in England, and the abstract from M. Noir's paper which we publish below shows (as did the previous account by our Special Commissioner) how some important ethical questions have been solved in France. We learn how our French colleagues, for example, deal with "the right of choice of a medical man by the patient," a matter upon which we have often had to write. We note also "that a medical examination of an injured workman can only take place in the presence of the medical man in attendance, who should have notice by letter two days beforehand." This, again, is a point which has received attention from us, and is one of very great importance to general practitioners. The general remarks of M. Noir on the Socialistic tendencies of modern medical practice will also be read with interest by all British practitioners. We, too, on this side of the Channel have seen recently great developments of the system of the State employment of medicine, and it behoves us to be aware of its professional perils as well as of its advantages.

"It is not amongst its enemies that the medical profession should seek the danger which menaces it; it is in the transformation which it appears called upon to undergo with the times; it is within its own body that the germ of dissociation is likely to arise which will be capable for a time of arresting its healthy growth and of compromising its success. In proportion as the rôle of the medical man has increased and been ennobled, his material position has diminished and has become more and more precarious. The consideration and moral influence which he enjoyed have attracted a larger and larger number of young men to a medical career. The development of general education has further unduly increased the number of students. Medicine is now, indeed, an overcrowded profession. In consequence of this a crisis has arisen, dangerous without doubt, but which will be only transitory, like every crisis, and of little importance if it did not threaten to make the practice of our art evolve in a pernicious manner.

[1] THE LANCET, March 30th (p. 911) and April 27th (p. 1190), 1907.

Subject to the economical law of supply and demand the medical profession, after passing through a painful period of more or less prolonged malaise, will most likely cease to be overcrowded.

But it is a more serious danger which threatens us, a danger against which we ought to take immediate steps: it is the descent of the physician into the ranks of paid servants and (State) functionaries. These terms are synonymous; a physician becomes a paid servant when he enters the employment of a master or of any society which appoints him with the object of using his services at their discretion. If the society which employs the physician is the State, the department, or the commune, he becomes a functionary.

This condition of affairs tends to spread because many young medical men, like most young men of the middle-class, are wanting in initiative, in activity, and in energy, and prefer a badly paid appointment to the more laborious and more difficult struggle which building up a private practice entails. Besides, all those who in any way are at the head of any group of men, as owners of factories, company directors, presidents of mutual aid societies, clergy, mayors, administrators, or politicians, seek to increase medical appointments. They hope to succeed in making the practitioner a servant by having him in their pay, and the more important his social rôle becomes the more they believe it is to their interest to enslave him.

Up to the present the State appointments assigned to medical men have been services of public utility in which medical coöperation appeared much more appreciated than free and independent action. These appointments, connected with poor relief, with control, with sanitation, with various expert examinations (in which the medical man, poorly paid, looked only to his conscience), were considered legitimate and caused prejudice to no other medical practitioner. But gradually certain of these appointments will be turned into veritable administrative offices, the medical men will attend, under orders and at a reduced price, the patients on their lists. Political and religious struggles will intervene and the medical man will be obliged to become an electoral agent and to espouse the cause of the political tyrant of his district. Coöperation—that useful and fruitful work which properly organised and confined to its beneficent rôle could assist greatly in solving appropriately the difficulties of the social problem—has too often given the saddening spectacle of a brilliantly decorated theatre on the stage of which a medical man appears in some badly dissimulated political farce. Relegated to a servile condition the medical man can no longer fulfil the important rôle which it seems the evolution of science must intrust to him. For such a high mission moral qualities are necessary, which complete independence can alone assure. But the undignified competition for these medical appointments increases daily. Those who employ us find a decided advantage in this unbridled competition and seek, without any scruple, to benefit from it. This enslaving of the medical man—this degradation of a salary substituted for an honorarium—gradually brings about in the medical profession the formation of a proletariat, a proletariat so much the more dangerous as it is an intellectual proletariat.

Before these dangers the medical profession has quite naturally reacted, and as a means of defence developed the *entente syndicale*. Practitioners have little by little found out that isolated they could no longer resist the demands of powerful societies. They formed themselves into groups and in order to show more clearly the defensive object of those groups they gave them the form of syndicates. The movement has taken 25 years for its production, but if the beginnings of the medical syndicate have been difficult and slow we can state with some pride that their progress has been constant and that their power of action has been able, usefully and vigorously to make itself manifest of late years, that at last we are in a position to hope that they will be capable of facing the difficulties of the present situation.

During many years the medical syndicates resisted the abuses of which practitioners complained in their localities, but only in an isolated manner and without coördinating their efforts. Little by little, however, in the course of action by the syndicates a principle was evolved which, if successfully applied, will deal a fatal blow to the salaried and functionary practitioner. This is the free choice of a medical man by the patient.

The principle of the free choice of a medical man by the patient, which we have called 'the liberty of confidence,' is not one of those theoretical ideas started for the occasion and issue of a dreamer's brain, as Minerva came forth fully armed from the head of Jupiter. It is a practical conception which the syndicates have only adopted after proving the possibility of its application. It began in the organisations for gratuitous medical assistance before the law of 1893. Since the application of this law a very liberal organisation has been established in certain districts allowing the pauper to have recourse to the medical practitioner of his choice. This organisation, which was started in the departments of Landes and of the Vosges, has removed the greatest objections to the 'organisation of medical assistance' (for the poor) and has now been adopted by two-thirds of France. It is needless to say that all the medical syndicates persistently demand its application. We will not enter into the working details of the Vosgian system, which requires payment by visit and by kilometre travelled and the establishment of control commissions for the prevention of abuses which are always possible.

The legislature, in making employers liable for the cost of medical attendance on injured workmen, had to settle the conditions under which this attendance should be given. After a very lively struggle against the insurance companies who wished at any cost to monopolise the attendance required by the victims of accidents at work; after having had to defend themselves against a number of their colleagues who, even in the councils of the medical syndicates, defended this monopoly, thus sacrificing the general interest for their personal advantage, the medical syndicates succeeded in having 'the liberty of the choice of a medical man' recognised by the law. They did better, thanks to the energy, devotion, and inflexible tenacity of Dr. Diverneresse who devoted himself entirely to this task; they succeeded in having inserted in Article 30 of the law penal provisions against any person who offered obstruction to the right of the injured person to choose his medical man. The legislature, at the request of the medical syndicates, guided by Dr. Diverneresse, even added to the law a regulation of medical etiquette by stating in Paragraph 5 of Article 4 that the medical man employed to obtain information for the employer or for the insurance company as to the condition of the injured workman could only do so 'in presence of the medical man in attendance who should have notice by letter two days beforehand.'

The promulgation of this law of April 9th, 1898 (amended March 22nd, 1902, and March 31st, 1905), was a victory for the medical profession the consequence of which may be considerable, and which in any case clearly indicates the way in which it ought to move in order to insure independence and dignity for the practitioner, while preventing his descent into the ranks of salaried officials and functionaries. It is thus that the liberty of confidence becomes the corner-stone of medical independence. Is there a more solid base than this to serve as a rallying point for the work of the medical syndicates? Have not revolutions been started for much less worthy liberties?

The liberty of confiding his defects and his miseries, his health and that of his family to a medical man whom he knows, whom he esteems, in whom he has faith: is this not the most sacred liberty and that which ought to be the most inviolable? And is it not violated daily, this individual liberty, in that which is the most delicate, the most intimate, by public and private administrations and by mutual aid societies, which impose upon the patient treatment by an official or salaried medical man? Always received with apprehension and distrust, this medical man will have to exert prodigious devotion, mildness, and tact in order to gain the confidence of patients who are forced to receive him. And if, in consequence of a death, a family suspects this medical man of inability or of negligence what an intolerable position it would be for him if his duties called him again to those who believed that they had been victimised by him. He would find dark and hostile countenances and anxious glances. He would feel that the patient had no confidence in him, that he only half harkened to his advice, that in these circumstances the best treatment could not be fruitful, and the least complication, the least incident would be cast up to him as a crime. Intimately convinced that without the confidence of the patient the task of the medical man is incompatible with his dignity the associated medical men have vigorously proclaimed respect for it.

When all the medical men of a town or district are united they should be able to take up seriously the study of questions of hygiene and of prophylaxis. Solidly organised

they can provide the practitioner residing far from large centres with the laboratories which, left to himself, he could not seriously organise and which he would not have the leisure to use. Gradually becoming conscious of their power we shall afterwards see them found and maintain, with their own resources, paying hospitals for people of limited means, who require assistance and who often only go into hospital with regret. Thus an end will be put to the principal argument of those who pretend that the doors of the hospital cannot be closed to people of means. Hospital abuse, of which the medical profession complains so bitterly and in consequence of which the poor suffer, would disappear.

But if we ought not to despair of the future of the medical profession we ought also not to forget for one instant that it is at a dangerous turning point in its history. The diagnosis of the disease from which it suffers has been made; it has been given a name, '*functionarism*.' The prognosis is serious. But to combat and even to prevent it we have powerful specifics, which are mutual coöperation, strict cohesion, progressive application of the liberty of confidence, and demonstration by deeds that the first care of the medical syndicates is to put themselves at the service of the sick and of the public interest."

REPORTS ON PLAGUE INVESTIGATIONS IN INDIA

ISSUED BY THE ADVISORY COMMITTEE APPOINTED BY THE SECRETARY OF STATE FOR INDIA, THE ROYAL SOCIETY, AND THE LISTER INSTITUTE OF PREVENTIVE MEDICINE.[1]

THE present report is devoted to an account of the epidemiological observations of the Commission which were made in Bombay city, in four villages in Bombay Island, and in two villages in the Amritsar district of the Punjab. In all places the primary object of inquiry was the relationship of rat plague to human plague. Owing to the necessarily complex nature of the data many of the important facts brought forward cannot be condensed into a short summary.

XXI.—*Digest of Recent Observations on the Epidemiology of Plague.*

This paper contains an abstract of the observations and opinions which have been published during the last ten or 12 years on the connexion between rat and human plague, the mode of infection, manner of spread, &c.

XXII.—*Epidemiological Observations made in Bombay City.*

The Commission made an exhaustive inquiry into plague in rats and men in Bombay city over a period of 16 months. The period dealt with in this report is the last 12 months of the whole investigation (October, 1905, to September, 1906). With the coöperation of Dr. J. A. Turner and his sanitary staff more than 117,000 rats were collected and examined for plague infection in the laboratory at Parel; nearly 18,000 were found infected. At the same time, nearly all the cases of human plague (more than 10,000) in the city were inquired into with the view of ascertaining the probable mode and place of infection, &c. The density of both rat and human plague in Bombay was, however, so great that the Commission found itself unable to draw any very definite conclusions with regard to these points which were more satisfactorily investigated in the smaller village communities. The large numbers in Bombay, on the other hand, show the broad temporal and geographical relations between plague in rats and in men better than the smaller epidemics in limited communities.

By far the most abundant and important rodents in Bombay city are Mus rattus and Mus decumanus. The habits and distribution of the two species differ, for while Mus decumanus lives for the most part outside houses in sewers, stables, &c., Mus rattus is essentially a house rat and abounds in the most intimate relationship with the people. Both are subject to plague; but the percentage of Mus decumanus (18·8 per cent.) found infected was twice as great as Mus rattus (9 5 per cent.). The authors point out in this connexion that the former species usually harbours twice as many fleas as the latter (e.g., in April, 1907, an average of 13·9 fleas per live rat was found in 306 Mus decumanus examined, as against 5·2 per rat on 1911 Mus rattus), while their susceptibility to plague experimentally transmitted by fleas is the same. The breeding season of both species was examined by recording the number of pregnant females and the number of young rats caught week by week; no correlation between the breeding season and epizootic plague was obtained.

Acute plague in both species of rat as well as in man occurs in Bombay city throughout the year; the rat epizootic appeared to begin simultaneously in many parts of the city and no particular focus of origin could be ascertained for the epizootic or the epidemic. It is shown that the general intensity of rat plague corresponds to the intensity of human plague in the different sections of the city: eight sections showed from 1·0 to 3·1 plague rats per building actually obtained and a plague death-rate from 10·7 to 17 per mille, while in the other six sections the plague rats per building were 0·6 or less and the mortality 3·6 to 13·1 per mille. The minute details of the spatial relations between rat and human plague were, for reasons already alluded to, difficult to make out; the general coincidence is illustrated by a series of monthly maps of one district.

The close correspondence in time and relative intensity at different times of the epizootics and epidemic is well shown in a series of curves. That for the whole of Bombay city shows that the beginning of the epizootic in Mus decumanus precedes the epizootic in Mus rattus by about 16 days, and that the epizootic in Mus rattus comes on some 25 days before the rise of the human epizootic. This is confirmed by a series of similar curves for 12 districts of Bombay taken separately. The authors point out that these intervals are not inconsistent with the hypothesis that the flea is the transmitting agent from rat to rat and from rat to man, and they conclude that the epidemic is directly attributable to the Mus rattus epizootic which in its turn takes origin in the Mus decumanus epizootic.

In a statistical analysis of these data, printed as an appendix, Mr. M. Greenwood shows that the correlation between human plague and plague in Mus rattus is of very high order ($0·8801 \pm 0·0184$); he also reaches the important conclusion that the correlation between plague in man and in Mus decumanus (which reaches the large figure of $0·7481 \pm 0·036$) is probably spurious, depending on the correlation between plague in Mus decumanus and in Mus rattus (which is still higher: $0·945 \pm 0·00875$).

The paper concludes with a review of the sanitary circumstances of Bombay city in their relation to the prevalence of plague. The authors show that conditions of housing, ventilation, conservancy, and the like can only be considered factors of importance in so far as they encourage the rat population and bring it into more intimate relationship with the people. Even when the people live in well-constructed buildings free from sanitary defects (as in the municipal tenement buildings) they suffer severely from plague owing to their being perfectly agreeable to allow rats to live and to breed in their rooms.

XXIII.—*Observations made in Four Villages in the Neighbourhood of Bombay.*

The villages of Sion, Wadhala, Parel, and Worli in Bombay Island were kept under continuous close observation and were systematically trapped for rats. In Parel there is a sewerage system and Mus decumanus occurs occasionally; Mus rattus, however, greatly predominates and is the only species found in the other three villages. No cases of human plague occurred outside the epidemic season. In Sion, Parel, and Worli no plague rats were found during the same period; in Wadhala (where some of the attendants at the Parel laboratory were living) a single rat suffering from acute plague was caught in August. The inhabitants of all four villages are in more or less constant communication with Bombay city.

1. *Sion Village* (population 950).—The origin of plague in this village in January, 1906, could not be definitely ascertained; the available evidence points to the infection having been imported on or about the person of a woman who came from an infected quarter of Bombay. Human plague began soon after, and in the same block of houses as, the occurrence of a dead rat. The inhabitants then evacuated that part of the village and were replaced by guinea-pigs in cages in each house which were kept under careful observation. Plague gradually spread from the original focus through the village, the guinea-pigs dying from plague, plague-infected

[1] Third report: Journal of Hygiene, vol. vii., pp. 693-986, with 23 plates, 57 maps, and 19 charts. Accounts of the previous reports will be found in THE LANCET, Nov. 3rd, 1906, p. 1233, and July 27th, 1907, p. 246.

fleas being caught in the houses and plague rats being found from time to time. In all 45 per cent. of the houses of that section of the village were shown to be plague-infected; by the nature of the experiment contact between the guinea-pigs in the different houses was excluded. Among the rats the infection persisted for two months and took six weeks to travel 300 feet. The authors conclude that the infecting agent was slowly disseminated among the guinea-pigs by plague-infected rats.

2. *Wadhala Village* (population 1500).—The observations made here were incomplete. In the early part of the epidemic season two cases of plague were imported from Bombay and died in the village without giving origin to any other human cases or any epizootic. Subsequently a number of human cases occurred, some of which were in close association with dead rats which could not be obtained for examination or with rats proved to be plague-infected.

3. *Parel Village* (population 3525).—During the period of observation 28 cases of human plague occurred in this village. Five of these were definitely associated in time and place with a limited epizootic among Mus rattus confined to one corner of the village. Ten cases were brought to Parel already infected; in six the probable source of infection could not be determined, the diagnosis being doubtful in one case, while seven were probably infected outside the village as they had recently visited places where rat plague was known to be present. An interesting observation is detailed as follows:—

> Cases 14, 15, 16, 18, 19, 24, and 25 were all employed at a cotton spinning mill in the Sewri section of Bombay. Dead rats had been found in several parts of this mill, but especially in the mixing department, where cases Nos. 14, 15, 18, and 19 worked. Two of these men had thrown out the rats. Cases 16 and 24 were employed in other parts of the same mill. Case 24 lived with her son (25) who occasionally visited the mill with his mother. The woman had noticed dead rats in the go-down where she worked. All these cases and three others investigated by us who lived in other parts of Bombay but worked in this mill were attacked between the 30th April and 10th May. An interesting experiment was done in the mixing room in the mill. On the 12th May two guinea-pigs were placed in it; they were examined for fleas on the 14th May. On one guinea-pig 103 and on the other 150 rat fleas were captured. After the fleas had been removed the guinea-pigs were taken to the laboratory and isolated. They remained healthy. The fleas were transferred to a fresh guinea-pig confined in a flea-proof cage in the laboratory. This guinea-pig died of plague on the 20th May. The mixing room was thus proved to be infective. It is important to note that these cases lived in different parts of Parel village and that we could obtain no evidence of a rat epizootic at their homes which did not prove infective to guinea-pigs. The infection therefore may reasonably be attributed to the mill in which they worked.

The infectivity of the houses in which plague cases occurred was investigated experimentally by means of guinea-pig flea traps. Though one of the imported cases infected the house in which she died, as shown by the capture of plague-infected fleas therein, none of them gave origin to any further human cases or to any epizootic among the rats. A number of interesting data are given relative to the prevalence of rats in this village which was very thoroughly trapped for nearly 12 months. This systematic trapping appeared materially to reduce the rat population.

4. *Worli Village* (population 2508).—Systematic trapping for a year appeared to reduce the rat population to approximately one quarter of the original number. No epizootic occurred among the rats and only three cases of human plague. It is probable that all these contracted the infection outside the village. In two of the cases evidence was obtained which pointed to infection so introduced having spread in one instance to a guinea-pig and in the other to a rat.

XXIV.—*General Considerations Regarding the Spread of Infection, Infectivity of Houses, &c., in Bombay City and Island.*

With regard to the spread of infection within houses the authors point out that the universal experience in plague hospitals has been that infection is not, except in pneumonic cases, communicated from the sick to the healthy attendants and others. Their own observations show that guinea-pigs running free in the plague wards do not collect rat fleas nor do they contract plague; that guinea-pigs do not contract plague when kept in a flea-proof hut in close contact with the bedding of plague cases removed daily for several weeks; and that the urine and fæces of acute plague cases are not infective to guinea-pigs by cutaneous inoculation. Their observations in Bombay villages tend to show that infection efficient to start an epidemic is not brought to a place in the persons of those sick of plague unless it is first effective in starting an epizootic. They also point out that in Bombay city comparatively few houses yield more than one or two cases. Recalling the experiments already published,[2] showing that plague is by no means easily transmitted from rat to rat by means of the human flea and that the degree of septicæmia found in the human cases is much less than in infected rats, they conclude that the transmission of infection from man to man by Pulex irritans is probably a very infrequent occurrence. The observations made in the village of Sion show that a widespread dissemination of infection in houses may result from an epizootic in the rats when direct contact with sick occupants of the house is rigidly excluded. In general, therefore, they reach the conclusion that contact with plague cases plays no part in the spread of the epidemic.

Plague is admittedly a place infection—i.e., a house or a room in a house may be definitely infective. Seeing that persons suffering from plague and their excreta are not infective and that, as was previously shown, the air and soil of plague-infected houses do not *per se* convey plague, much support is rendered to the view of the Commission that infection is contracted by man from the rat by means of rat fleas and that the infectivity of houses is due to the presence within them of infected rat fleas. It is also of opinion that plague may easily be transmitted to a distance by the same means.

During the whole of the work in Bombay no evidence was obtained suggesting that plague among the common or domestic animals (other than rats) was of any practical importance. Natural plague was observed only in guinea-pigs, rabbits, and monkeys (a limited epizootic in the Victoria Gardens) with one doubtful case in a cat.

XXV.—*Observations in the Punjab Villages of Dhand and Kasel.*

The villages of Dhand (population 1920) and Kasel (population 3938) were kept under close observation for a year from December, 1905. The general methods of inquiry were the same as those used in Bombay, and these villages were selected as representing isolated communities which had experienced an epidemic of plague in each year since its introduction into the district in 1902. An analysis of the data showed that plague did not tend to recur in the same houses year after year. The rats were practically all Mus rattus with a few Nesokia bengalensis; no Mus decumanus were found. In these villages Mus rattus is both a house and a burrowing rat. No relation was found between the breeding season of the rats and the prevalence of epizootic plague. As in the Bombay villages, extensive systematic trapping appeared to reduce materially the rat population. Of the fleas caught on the rats 98 per cent. were Pulex cheopis; the average number taken on each rat varied from 12·6 in April during the onset of the plague epizootic to 2·2 in August and September in the off-plague season. During the period November to April about 2 per cent. of the fleas were Ceratophyllus fasciatus (the common rat flea of Europe); none were found during the rest of the year.

Dhand village.—No definite origin could be ascertained. Acute rat plague (28 cases) slightly preceded human plague (32 cases) and the two show a close association in time during their prevalence from February to May. 11 rats suffering from chronic plague were taken between December and June. Of the human cases 22 inhabited 18 houses in which, or in the vicinity of which, plague rats had been found before or at the time of the occurrence of the cases. The other ten cases inhabited eight houses and no definite association with plague rats was demonstrated. Three of these eight houses (four cases) were, however, shown by guinea-pig experiments to contain infected rat fleas and two more of the cases lived close to these houses. Two of the remaining cases were clearly imported (late in the epidemic). The authors consider their failure to trace a more intimate association between rat and human plague to be largely due to the limitations of the available methods of finding plague rats.

Kasel village.—Here again the epizootic appeared to arise spontaneously though several of the neighbouring villages, including Dhand, were already infected. Acute rat plague was first discovered three days before the first indigenous human case and the close correspondence in time between the epizootic (238 acute plague rats) and the epidemic (75 cases) from April to July is well shown in a curve. 23 rats suffering from chronic plague were caught between April

[2] Journal of Hygiene, vol. vi., p. 521, and vol. vii., p. 413.

and December. The 75 human cases occurred in 67 houses (total houses in village 806); in the houses which furnished single cases there were 273 "contacts," of whom only 18 had been inoculated; none of these 255 susceptible persons contracted plague. 53 of the cases were definitely ascertained not to have been in contact with other plague cases. Of the 75 human cases, four were imported, 25 occurred in houses in which plague rats had been found, 36 in houses in the immediate vicinity of which plague rats had been found, and of the remaining ten cases six had visited at houses in which plague rats had been found, three lived in houses in the vicinity of which plague rats were found some days after they fell ill, and one was a doubtful case of plague.

Experiments in plague houses in Dhand and Kasel.—A number of experiments were carried out in these villages similar to those done in Bombay[3] showing that the infective agent in the houses was infected rat fleas. In 49 plague-infected houses guinea-pigs were allowed to run free for about 18 hours; in nine instances they afterwards died from plague. Three times as many fleas were caught on the guinea-pigs in plague-infected as in not plague-infected houses, and five times as many in houses which proved infective to guinea-pigs as in those not infective. Fleas found on guinea-pigs or rats in plague houses were transferred to guinea-pigs in flea-proof cages in the laboratory; in 10 out of 31 experiments the fresh guinea-pigs died from plague. In 51 experiments guinea-pigs, unprotected and protected with fine wire gauze or with "tangle toes," were placed in plague houses; a single flea was found on four of the protected animals, none of which died from plague; from one to 75 fleas were found on 34 of the 51 unprotected animals, six of which died from plague. Nearly 90 per cent. of the fleas caught on the "tangle toes" were rat fleas (the rest being cat fleas), and of 55 dissected the stomach contained plague bacilli in three.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY meeting of the Council was held on Jan. 16th, Mr. HENRY MORRIS, the President, being in the chair.

It was resolved that the election of the conservator of the museum should take place at the ordinary meeting of the Council on Feb. 13th.

It was resolved to approve of the suggested alterations of the Standing Rules relating to the conservator of the museum.

It was decided that during the next three months tea should be served at a charge of 4*d.* per person in the library for readers, or in the common room for readers who are Fellows or Members of the College.

A report was received from the committee on the annual report of the Council, and after consideration it was resolved that the first resolution carried at the annual meeting of the Fellows and Members should be referred back to the committee for further consideration. It was further resolved that the mover and seconder of the second resolution (which reaffirmed the desirability of admitting Members to direct representation on the Council) should be informed that the resolution had been laid before the Council and that the views of the Council upon the question referred to therein would be found in the last annual report of the Council. No action was taken with regard to the third resolution.

It was resolved that the mover and seconder of the fourth resolution should be informed that the Council saw no reason to adopt the suggestion. The fourth resolution suggested that when a poll of the Fellows and Members was taken on the question of the admission of women to the diploma of the College a similar course should be taken with regard to the proposal for direct representation of the Members on the Council.

The fifth resolution was a request that the Council should add a hood to the gown already worn by Fellows and Members. The Council resolved not to comply with the request on the ground that a hood was generally distinctive of a degree and was not in general use among colleges of similar standing.

The sixth resolution wished the Council to endeavour to join the work of the College with the University of London (so as to form an Imperial University of London). In reply to this resolution the Council directed that the mover and the seconder should be informed that the matter had been much discussed in the past and that it still occupied the attention of the Council.

Mr. Henry Morris, the President, was appointed Hunterian orator for 1909.

The PRESIDENT reported that he had given evidence on Dec. 20th last before the Home Office Committee on the London Street Ambulances. The evidence was based on a large amount of information which he had obtained from Paris, Berlin, and Boston (Massachusetts). A vote of thanks was given to the President.

Mr. Thomas Bryant was re-elected for three years a representative of the College on the council of Queen Victoria's Jubilee Institute for Nurses.

A committee was appointed to prepare a circular to the Fellows and Members asking their opinion as to the desirability of admitting women to the examinations for the diplomas of the Royal College of Surgeons of England.

CENTRAL MIDWIVES BOARD.

A MEETING of the Central Midwives Board was held at Caxton House, Westminster, on Jan. 16th, Dr. F. H. CHAMPNEYS being in the chair.

A deputation from the guardians and directors of the Coombe Lying-in Hospital, Dublin, consisting of Dr. M. J. Gibson, the Master, a member of the board of the hospital, and the honorary secretary, attended on Jan. 9th and presented a memorial praying the Board to rescind its resolution of Dec. 19th[1] removing the name of the Coombe Hospital from the list of recognised training schools. The memorial was supported by letters from the Very Rev. Canon Scally, the Rev. J. D. Smylie, and Sir Charles A. Cameron, medical officer of health of the city of Dublin, and by a statutory declaration made by the registrar of the Coombe Hospital as to the circumstances in which the board of the hospital first learned of the correspondence between the secretary, the late master, and the registrar on Dec. 30th. The members of the deputation spoke in support of the memorial and Dr. Gibson made application in due form for approval as a teacher. Having fully considered all the evidence and argument submitted to it by the deputation the Board took no action on the memorial but approved Dr. Gibson as a teacher.

Letters were considered from the late Master of the Coombe Hospital, Dublin, and from Messrs. D. and T. Fitzgerald, his solicitors, asking the Board to reconsider its decision not to accept any certificate signed by him in future and the following decision was agreed to: "That the Board declines to reconsider its decision."

A letter was considered from Dr. W. Arnold Evans, medical officer of health of Bradford, as to advertising by midwives and it was decided that Dr. Evans should be informed that the Board has no power to prohibit advertising by midwives.

A letter was considered from a midwife approved by the Board for the purposes of signing Forms III. and IV., inquiring whether her substitute, being a certificated midwife, may supervise cases on her behalf during her absence on a holiday. The Board decided that in the circumstances stated the substitute may supervise the cases, but that the duty and responsibility of signing the certificates remain with the midwife approved by the Board. In case of such substitute acting in this manner it shall be notified on the schedule at the time of signing. The Board then adjourned.

A letter has been addressed to the Lord President of the Privy Council by the secretary of the Central Midwives Board, giving facts and figures in relation to the training of midwives in Poor-law institutions. The letter points out that the public utterances of those who have advocated the transference of the responsibility for the training of midwives in workhouses or workhouse infirmaries from the Central Midwives Board to the Local Government Board appear to indicate an imperfect knowledge of the facts in connexion with the action of the Board in dealing with applications for approval from Poor-law institutions, and considerable misapprehension as to its causes and results. It continues as follows:—

A conspicuous instance of this occurred at the very meeting of the Association of Poor Law Unions at which the resolution referred to in

[3] Journal of Hygiene, vol. vi., p. 467, and vol. vii., p. 436.

[1] THE LANCET, Dec. 28th, 1907, p. 1881.

your letter of the 25th ult. was passed. Miss E. S. Kerrison, one of the guardians of West Ham, stated that "they had excellent wards, and many applications for training could be entertained if they were allowed to do so." "They had the wards and the women, but not the authority." This statement passed unchallenged at the meeting and no doubt had its influence on the passing of the resolution. The real fact was, as pointed out by the medical officer of the union in a letter to the *Poor Law Officers' Journal* of Dec. 7th, that the West Ham workhouse had been recognised by the Board as a training school for more than two years.

An analysis of the list of approved training schools as it stands at present, differentiating between Poor-law and non-Poor-law institutions, shows the following result:—Poor-law: London, 6; England (except London), 13; Wales, 1; total, 20. Non-Poor-law: London, 12; England (except London), 21; Wales, 1; total, 34. In addition to these the medical officers of the following Poor-law institutions have been recognised as teachers of midwifery, thus enabling the training of midwives to be carried on under precisely the same conditions as if the institution itself had been approved as a training school: Blackburn, Blandford, Brentford, Burton-on-Trent, Christchurch, Epsom, Halifax, Hastings, Kingston-on-Thames, Llanelly, Merthyr Tydfil, Newbury, Portsmouth, Prescot, Preston, Reading, Rotherham, Southampton, Swansea, Walsall, Wolverhampton, Woodstock, Worcester.

During the year 1907 the 20 approved Poor-law institutions and the 23 recognised Poor-law teachers have sent up 139 candidates to the Board's examinations. The 34 non-Poor-law institutions and the 64 teachers have sent up 1626. A scrutiny of the list of candidates shows that of the Poor-law institutions one, and of the Poor-law teachers seven, have never sent up a single candidate for examination. In these cases the Board concludes that either the material for training midwives does not exist, or that the facilities already accorded by the Board have not been fully utilised. Since Jan. 1st, 1907, 15 Poor-law institutions have applied to the Board to be approved as training schools. Of these applications three have been granted, ten refused, and consideration of the other two is still pending. A list of the applications refused, with the number of deliveries per annum in each institution, is as follows:—

Name of Institution.	Deliveries per annum.
Ashton-under-Lyne Union Hospital	23
Auckland Union Infirmary	8
Dewsbury Union Workhouse Infirmary	20
Gateshead Union Hospital	34
Kingston Union Infirmary	63*
Lincoln Workhouse	18
North Bierley Union Infirmary (Bradford)	16
Sculcoates Workhouse Infirmary (Hull)	37
Stepping Hill Poor-law Hospital (Stockport)	39
Wycombe Union Infirmary	10
	268

* Medical officer recognised as teacher.

It appears to the Board to be undesirable to accord the name of Training School to an institution which cannot within the Rules train more than two pupils per annum. In such cases where there is evidence of an effective possibility of adequate training, the policy of the Board is to recognise the medical officer as a teacher, a course which in no way limits the opportunity of the guardians for the purpose of training. I am to add that, while the Board is deeply conscious of the necessity of according due facilities for the training of midwives where adequate guarantee exists for compliance with the Rules, it is very doubtful whether Poor-law institutions are authorised to undertake the training of any pupils other than their own probationers. If the Board had granted all the applications for approval as training schools made during the current year by Poor-law institutions the list shows that the maximum addition to the number of candidates at the examinations would have been 13, trained under conditions inferior to the standard which the Board has endeavoured to maintain.

I am further to submit that, in view of these facts, there is no ground for the suggestion that the policy of the Board has operated to limit the effective employment of methods and material at present available for the training of midwives. In conclusion, I am to state that, in the opinion of the Board, a division of authority, such as is contemplated by the resolution of the Association of Poor Law Institutions in England and Wales, would be prejudicial alike to the due training of midwives and to the public interest.

THE VACCINATION ORDER OF 1907.

SOME difficulty has recently arisen amongst public vaccinators in connexion with Article III. of the Vaccination Order of 1907 in so far as it affects the contracts entered into with their respective guardians. It is well known that the Vaccination Order of last year was largely aimed at lowering the fees to which these officers were entitled, for it laid down that these fees should in future be set forth in an "instrument" or legal document having relation to the conditions of individual districts and sent to the guardians and public vaccinators concerned. It would appear that many of these officers have signed such an instrument without fully appreciating its significance, having misunderstood the meaning of the section of the Order which governed its issue, and the question of appealing to the Local Government Board has been raised by a number of them. On their behalf the following letter has been sent to that Board by the Association of Public Vaccinators of England and Wales:—

1, Mitre Court Buildings, Temple, E.C., Dec. 18th, 1907.

SIR,—As public vaccinators are continually seeking advice respecting their right of appeal against the "instrument" issued under the Vaccination Order of 1907, the members of my council have directed me to inquire whether I may be granted the privilege of an interview with one of the assistant secretaries or, in the alternative, whether I may be honoured with your advice in writing upon the following points:—

1. As to the procedure to be adopted by public vaccinators who desire to appeal and

2. As to the circumstances under which such appeal arises.

The public vaccinators who desire advice may be divided into the following classes:—(*a*) Those who having been forced by threats of 28 days' notice to accept what they consider inadequate fees have done nothing further. (*b*) Those who have been forced in a similar manner but who have also signed new contracts. (*c*) Those who have, without such compulsion, accepted lower fees, but who are not satisfied and would like to appeal to the Local Government Board, either at once or after an interval, during which they are prepared to give the new fees a fair trial. (*d*) Those who have not agreed with their guardians before Oct. 1st last.

My council is very anxious to know whether an appeal arises upon the issue of the instrument in all of such cases, and if not whether it arises in any, and if so in which of them, and what has to be done by a public vaccinator who desires to appeal to the Local Government Board.

In some cases public vaccinators have agreed with their guardians for a reduced fee on the understanding that it is only for a short period and as a trial, and in those cases the public vaccinators are anxious to know whether, if the guardians refuse to reconsider the matter, they (the public vaccinators) will have a right to appeal to the Local Government Board.

Apologising for troubling you at this length,

I am, Sir, your obedient servant,

(Signed) CHAS. GREENWOOD, Organising Secretary.

The Secretary, Local Government Board.

This letter elicited the following reply:—

Local Government Board, Whitehall, S.W., Jan. 1st, 1908.

Sir,—I am directed by the Local Government Board to advert to your letter of the 18th ultimo and to state that the appeal to the Board provided for in Article III. of the Vaccination Order, 1907, arises in cases in which the vaccination contracts have not been determined and in which the guardians and public vaccinators have failed to agree on the fees to be paid; but that a public vaccinator has no ground of appeal if he has signed the forms agreeing with the guardians as to the fees or has entered into a new contract with the guardians.

A public vaccinator entitled to appeal to the Board should send to the Board a detailed statement of his reasons for declining to accept the fees offered by the guardians.

I am, Sir, your obedient servant,

(Signed) J. S. DAVY,
Assistant Secretary.

C. Greenwood, Esq.

We have carefully studied the Order to which this correspondence refers, which is couched in the usual confusing mass of legal verbiage in which Parliamentary documents seem to seek the concealment of their real meaning. We cannot explain why a document which is nominally intended for the guidance of the common people of England cannot be couched in language which may be readily "understanded of the people," and we can sympathise with those gentlemen who have misapprehended the clause in question, but there is no doubt that if they have signed an "instrument" issued under its authority they have legally bound themselves to accept the conditions of service and remuneration therein contained. Public vaccinators objecting to the terms of the "instrument" submitted to them should therefore appeal to the Local Government Board before signing it or they will find themselves in an unfortunately false position

Looking Back.

FROM

THE LANCET, *SATURDAY*, Jan. 23rd, 1830.

Gun-shot Wounds.—Gun-shot wounds have very commonly been considered as altogether different from wounds of other kinds, as being very peculiar in their nature. The injury which is inflicted by wounds of this nature, is very considerable. The inflammation which they produce in the part is violent; their consequences altogether are very serious. Hence, when fire-arms were first introduced, the effects of these wounds were found so much more serious than those which were ordinarily occasioned by the weapons which were previously employed, that it was supposed that gun-shot wounds were of a poisonous nature. It was suggested that the gunpowder, or the heat of the ball, in some measure affected the wound, and thus that some highly deleterious effect was produced in the injured part. Attempts were therefore made to counteract this deleterious influence by such applications as were supposed to be capable of counteracting heat; the application of turpentine, hot oils, and similar hot and stimulating remedies, were resorted to for this purpose. Writers of modern times, particularly the military surgeons of Europe, have had ample opportunities of observing gun-shot wounds, and of investigating their

nature; so that this part of the subject, and the particular rules applicable to it, are now very well understood. The only peculiarities in gun-shot wounds, arise from the nature of the objects by which the wounds are inflicted, and the degree of force with which they strike the textures of the human body. Balls, bullets, fragments of shells, splinters of stone and wood, and various hard substances of these kinds, are the objects by which the wounds are made, and they are driven with great force against the body; they produce lacerated and contused wounds of the most serious kind; that is, they produce injuries which are attended with very serious local inflammation. The degree of violence with which these wounds are inflicted, differs in different instances. If a gun-shot projectile meets the body directly and in full force, it traverses the part if it be small; or if it be larger, and meet a limb, for example, it probably carries it away. If a small substance meet the body directly, with a less degree of force, it will tear and lacerate the part, break and splinter the bone, producing injuries of this kind according to the degree of force with which it was moving. Sometimes balls or bullets strike the body obliquely; they do not come directly against it, but they strike it at various angles, and, in fact, do not enter the body, but, having touched it, glance off again. Under these circumstances, the soft textures that intervene between the skin and the bone may be divided, and effusion of blood may take place; the bone itself may be broken without the skin apparently being injured. It often happens in battle, that persons are found dead on the field in whom there is no appearance of a wound to account for death; but if the bodies be accurately examined, some injury of this kind will be found to have taken place; and those injuries have been very commonly ascribed to the "wind of the ball." It has been supposed, that a ball which has not struck the body, but has passed very near to it, produces some kind of influence, and that influence has vaguely been ascribed to the "wind" of the cannon ball. I fancy this explanation does not rest on any solid foundation; we have no proof for saying that a cannon ball by its wind, in passing very near to the body, will commit this injury; in fact, if the limb of a person be cut off by a cannon ball, it is certain that the ball must go very near to the other, yet you do not find that other at all injured. There can be no ground then for supposing that these injuries are occasioned by the wind of projectiles. In other cases we find that bones may be broken, although the skin may be uninjured; the state of the skin, therefore, is no proof that considerable violence has not been offered to a part.[1]

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 9139 births and 6227 deaths were registered during the week ending Jan. 18th. The mean annual rate of mortality in these towns, which had been equal to 16·9 and 19·3 per 1000 in the two preceding weeks, further rose to 20·0 in the week under notice. During the first three weeks of the current quarter the death-rate in these towns averaged 18·7 per 1000; the rate during the same period in London did not exceed 18·3. The lowest annual death-rates last week in the 76 towns were 9·1 in East Ham, 10·7 in Walthamstow and in Hornsey, and 11·6 in Tottenham; the rates in the other towns ranged upwards to 29·3 in Oldham, 30·7 in Warrington, 32·2 in Liverpool, and 33·6 in Bootle. The rate in London last week did not exceed 19·8. The 6227 deaths registered in the 76 towns during the week under notice showed a further increase of 209 upon the numbers returned in the two preceding weeks, and included 501 which were referred to the principal epidemic diseases, against 393 and 457 in the two previous weeks; of these, 164 resulted from whooping-cough, 130 from measles, 63 from diphtheria, 59 from diarrhœa, 55 from scarlet fever, 30 from "fever" (principally enteric), but not one from small-pox. The deaths from these epidemic diseases in the 76 towns were equal to an annual rate of 1·6 per 1000, the rate from the same diseases in London being 1·5. No death from any of these epidemic diseases was registered last week in East Ham, Huddersfield, Bournemouth, St. Helens, Hornsey, or in four other smaller towns; the annual death-rates from these diseases averaged upwards in the other towns to 4·1 in South Shields, 5·4 in Merthyr Tydfil, 5·9 in Warrington, and 6·6 in Tynemouth. The fatal cases of whooping-cough, which had been 92 and 127 in the two preceding weeks, further rose to 164 last week; the highest annual death-rates from this disease were 1·9 in Reading and in Aston Manor, 2·7 in South Shields, 3·4 in Merthyr Tydfil, and 3·7 in Warrington. The deaths from measles, however, which had been 103 and 141 in the two previous weeks, declined last week to 130; the highest death-rates from this disease last week were 2·1 in Swansea, 2·3 in Willesden and Rhondda, 3·0 in Wallasey, and 6·6 in Tynemouth. The 63 fatal cases of diphtheria also showed a decline, but included 19 in London, three in Portsmouth, three in Liverpool, 11 in Manchester and Salford, and two in Gateshead. The deaths referred to diarrhœa showed a slight increase and the 55 deaths from scarlet fever also included those returned in recent weeks and included 24 in London, five in Birmingham, five in Liverpool, and two in Middlesbrough. The 30 deaths referred to "fever" also showed a slight increase upon recent weekly numbers; two were returned in Leyton, three in Birmingham, four in Nottingham, nine in Manchester and Salford, and three in Liverpool. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals, which had declined in the six preceding weeks from 5581 to 4481, had further fallen to 4325 on Jan. 18th. No case of small-pox has recently been admitted to these hospitals. The deaths in London referred to pneumonia and other diseases of the respiratory organs, which had been 333 and 460 in the two previous weeks, further rose to 498 during the week under notice, and exceeded by 112 the corrected average number in the corresponding week of the five years 1903–07. The causes of 57, or 0·9 per cent., of the deaths registered in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Nottingham, and in 47 other smaller towns; in London all but one of the 1825 deaths were duly certified. No fewer than 16 of the causes of death were, however, uncertified in Liverpool, six in Birmingham, four in Hull, and three both in Manchester and Burnley.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 20·6 and 24·3 per 1000 in the two previous weeks, was again 24·3 in the week ending Jan. 18th, and exceeded by 4·3 the mean rate during the same week in the 76 English towns. Among the eight Scotch towns the death-rates ranged from 16·1 and 17·3 in Aberdeen and Paisley to 28·3 in Leith and 29·3 in Glasgow. The 857 deaths in these eight towns exceeded the number in the previous week by two, and included 158 which were referred to the principal epidemic diseases, against 127 and 143 in the two preceding weeks; of these, 92 resulted from measles, 30 from whooping-cough, 13 from diarrhœa, 12 from "fever," five from diphtheria, five from scarlet fever, and one from small-pox. These 158 deaths were equal to an annual rate of 4·5 per 1000, which exceeded by no less than 2·9 the mean rate last week from the same diseases in the 76 English towns. The fatal cases of measles in the eight Scotch towns, which had been 53, 65, and 84 in the three preceding weeks, further rose to 92 in the week under notice, of which 73 occurred in Glasgow, seven in Greenock, and six in Dundee. The 30 deaths from whooping-cough also showed a considerable increase upon the numbers returned in recent weeks, and included 17 in Glasgow, five in Leith, and four in Edinburgh. The deaths attributed to diarrhœa were, however, somewhat fewer; eight were returned in Glasgow and three in Dundee. Of the 12 deaths referred to "fever" in the eight towns nine were certified as cerebro-spinal fever (including cases in Glasgow and two in Edinburgh), and three as enteric fever, all of which occurred in Glasgow. Of the five fatal cases of scarlet fever three were returned in Glasgow and two in Edinburgh. Diphtheria caused two deaths in Dundee; and the fatal case of small-pox occurred in Leith. The deaths referred to diseases of the respiratory organs in these eight towns, which had been 128 and 205 in the two preceding weeks, declined to 199 in the week under notice, but exceeded by 22 the number from the same

[1] Excerpt from "Lectures on Surgery, Medical and Operative, delivered at St. Bartholomew's Hospital by Mr. Lawrence. Lecture XVII."

diseases in the corresponding week of last year. The causes of 22, or 2·6 per cent., of the deaths in these towns last week were not certified or not stated; in the 76 English towns the proportion of these uncertified deaths last week did not exceed 0·9 per cent.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had been equal to 25·5 and 26·0 per 1000 in the two preceding weeks, further rose to 31·2 in the week ending Jan. 18th. During the first three weeks of the current year the death-rate in the city averaged 27·6 per 1000, the rates during the same period not exceeding 18·3 in London and 18·2 in Edinburgh. The 236 deaths of Dublin residents registered last week showed a further increase of 39 upon the numbers returned in recent weeks, and included but three which were referred to the principal epidemic diseases, against ten and four in the two preceding weeks; all these three deaths were referred to "fever," probably enteric. These three deaths from epidemic diseases were equal to an annual rate of 0·4 per 1000, the death-rates from the same diseases last week being 1·5 in London and in Edinburgh. No death in Dublin last week was referred to small-pox, measles, scarlet fever, diphtheria, whooping-cough, or diarrhœa. The 236 deaths from all causes in Dublin last week included 37 of infants under one year of age and 76 of persons aged upwards of 60 years; the number of deaths of elderly persons showed a marked increase upon the numbers returned in recent weeks. Nine inquest cases and seven deaths from violence were registered, and 98, or 41·5 per cent., of the deaths occurred in public institutions. The causes of five, or 2·1 per cent., of the deaths in Dublin last week were not certified; the proportion of these uncertified causes of death last week did not amount to 0·1 per cent. in London but were equal to 2·4 per cent. in Edinburgh.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified: Civil Practitioner J. Kirkwood to be Surgeon and Agent at Helmsdale.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel John C. Haslett is placed on temporary half-pay on account of ill-health (dated Jan. 20th, 1908).

Lieutenant Colin Cassidy, from the Seconded List, to be Lieutenant (dated Jan. 1st, 1908).

Colonel D. Wardrop has been selected to succeed Lieutenant-Colonel H. E. R. James as Commandant and Director of Studies, Royal Army Medical College. The undermentioned have joined at Aldershot and have been posted as follows: Lieutenant R. de V. King and Lieutenant J. C. L. Hingston to the Cambridge Hospital for duty, and Lieutenant J. B. Hanafin to the Connaught Hospital for duty. Lieutenant-Colonel A. E. Tate and Captain H. A. Bransbury have joined the London District for duty. Major M. Boyle has been posted to the Station Hospital, Lucknow, and appointed Specialist in Electrical Science, 8th (Lucknow) Division.

VOLUNTEER CORPS.

Rifle: 3rd Volunteer Battalion, The Northumberland Fusiliers: Henry Smurthwaite (late Captain) to be Surgeon-Lieutenant (dated Nov. 1st, 1907). The Queen's Rifle Volunteer Brigade, The Royal Scots (Lothian Regiment): The undermentioned Surgeon-Captains to be Surgeon-Majors: J. H. A. Laing (dated Oct. 28th, 1907); and J. Pirie (dated Oct. 29th, 1907). 1st Volunteer Battalion, The Prince Albert's (Somersetshire Light Infantry): Supernumerary Surgeon-Major J. M. Harper (Brigade Surgeon-Lieutenant-Colonel, Senior Medical Officer, Cornwall and Somerset Volunteer Infantry Brigade) to be Surgeon-Lieutenant-Colonel, remaining supernumerary (dated Dec. 21st, 1907). 1st Herefordshire Volunteer Rifle Corps: Arthur Llewellyn Baldwin Green (late Lieutenant) to be Surgeon-Lieutenant (dated Dec. 16th, 1907). 5th Middlesex (West Middlesex) Volunteer Rifle Corps: Surgeon-Captain and Honorary Surgeon-Major Richard Charles Maron Pooley (late 1st Volunteer Battalion, The Duke of Cornwall's Light Infantry) from the Retired List to be Surgeon-Captain, with the honorary rank of Surgeon-Major (dated Jan. 1st, 1908).

ALEXANDRA MILITARY HOSPITAL, PORTSMOUTH.

The Royal opening of the New Alexandra Military Hospital on the southern slopes of Portsdown Hill, near Portsmouth, has been abandoned. The Portsmouth Military Hospital staff will enter into occupation of the new buildings shortly.

THE NEW MEDICAL SERVICE FOR THE TERRITORIAL FORCE.

The Director-General of the Army Medical Service addressed a meeting of medical men at the West Kent Hospital, Maidstone, on Dec. 17th last, upon the new medical service for the Territorial Force. Dr. C. E. Hoar was in the chair and invitations had been sent to all medical officers of Volunteers in the Home Counties Division of the Eastern Command. There was a full and appreciative audience, which included amongst many others Colonel M. W. Russell, D.A.D.G., R.A.M.C., Surgeon-Colonel H. G. Thompson, V.D., Surgeon-Colonel R. T. Cæsar, V.D., Colonel T. F. MacNeece, A.M.S., and Major C. P. Oliver, who carried out the arrangements for the meeting and who was able to announce that although many of the officers invited had not been able to attend, yet all had expressed themselves as accepting the scheme as they had read it in the papers. Sir Alfred Keogh's speech was such as we have reported at similar meetings during his late autumn campaign and there is no occasion to repeat his arguments in detail. He took for his text the capital axiom that the function of the medical service of an army is to maintain the fighting strength of that army in the field and showed the lamentable deficiency of the present volunteer medical arrangements in administration, sanitation, and hospital organisation. He expounded his scheme by which he will be able to retain the services of the most skilled experts for the troops in time of war without burdening them with irksome and useless military training and also indicated how medical men who are unable actually to join the scheme may yet promote it by helping to instruct the members of the new force in sanitation, &c. He called attention to the great advantage which the continental powers have over us in the medical service of their home forces and submitted that we should become equally efficient in this respect. Sir Alfred Keogh very modestly deprecated the general professional opinion that the whole credit of the present scheme rests with him, pointing out that volunteer medical officers had long recognised the great need for reform and that in 1901 those in the north put forward a scheme to this end. Later the British Medical Association also evolved a scheme which was practically the same as that which he was advocating. The speaker was well received and subsequently replied to a number of questions addressed to him regarding administration, discipline, pay, and uniform under the conditions of the new service. Surgeon-Colonel Thompson proposed a vote of thanks and pointed out that although the Director-General disclaimed the credit of originating the proposals, yet he had coördinated them in a concrete form. The success of this meeting is of good augury for the future medical service of the Territorial Force in the Home Counties.

AN INDIAN EDITOR PUNISHED FOR DEFAMATION OF AN OFFICER OF THE INDIAN MEDICAL SERVICE.

Mr. Alfred Nundy and Lala Mool Chand, respectively editor and printer of the *Tribune*, a newspaper published at Lahore, have been fined, the former Rs.250 and the latter Rs.50, with alternatives of simple imprisonment, for defaming Captain W. E. McKechnie of the Indian Medical Service. From a long and elaborate judgment delivered by the judge, Mr. Connolly, we learn that one night in May, 1906, a punkha coolie was found lying dead at his post outside the barracks at Jullundur, and that it was alleged by the father of the deceased that his son had died from a kick given him by a soldier. At an inquest which was subsequently held the cause of death was found to have been double pneumonia, and it was further proved after a careful examination that there was not the slightest trace of physical injury on the body. The presiding magistrate upon this issued an order for the arrest of the deceased's father in order that he might be tried for having given false evidence at the inquest. The occurrence excited considerable attention and in a series of three articles having reference to it the *Tribune* made statements which Captain McKechnie, by whom the post-mortem examination was conducted, regarded as libellous. An action for defamation was accordingly brought by that officer against the above-mentioned persons, who in due course were

found guilty and punished as we have stated. In the course of his judgment Mr. Connolly said that he agreed with the contention of the prosecution that the meaning conveyed to the readers of the paper by the articles was that the medical evidence in the case was intentionally and deliberately false, and that it was given in order to screen from punishment a European soldier who had virtually murdered the deceased. The charge was one of perjury, of a criminal offence on a particular occasion, a charge affecting complainant's private as well as his public character. There were, however, several factors that should be taken into consideration in extenuation. These Mr. Connolly proceeded to enumerate at some length, adding his belief that there was no proof that Captain McKecknie had suffered any material damage. The extenuating circumstances, said Mr. Connolly in conclusion, "all call for a lighter penalty than the serious nature of the implication would otherwise demand." It is certainly fortunate for the editor of the *Tribune* that the learned judge was content to listen to the pleadings of mercy.

Correspondence.

"Audi alteram partem."

PLEURAL EFFUSION AND ITS TREATMENT.

To the Editor of THE LANCET.

SIR,—I hope the rest of your readers are edified by Dr. Harry Campbell's letter under the above title in your issue of Jan. 11th. I must candidly confess that I am not; however, as I hope to get some educational advancement in physics I continue this controversy. In my first letter I was quite willing to allow an *elastician* of Dr. Harry Campbell's standing to settle the meaning of the term *elasticity*, but on further consideration I find that it will not be confined either etymologically, physically, or in common parlance within the narrow bounds set for it by Dr. Campbell, so I therefore revert to my former position stated in my Bradshaw lecture. With the Greeks an ἐλατὴρ was a driver, a hurler, a charioteer, &c.; ἐλαυνειν to drive, banish, hurl, impel, put to flight, row, lead, carry forward, strike, wound, harass, beat out; ἐλασις the act of riding, driving, a military expedition, march, pursuit, &c.; hence ἐλαστικος and elastic were applied to any implement, such as a catapult, used for hurling missiles by the force of a spring. Possibly David's sling with which he slew Goliath may have been of this nature but I shall try a less strenuous method of disposing of my antagonist.

In the "Century Dictionary," which is one of the latest references I have at hand on the subject, I find under the meanings of *elastic*:—

> 2. Having, as a solid body, the power of returning to the form from which it is bent, extended, pressed, pulled, or distorted, as soon as the force applied is removed; having, as a fluid, the property of recovering its former volume after compression. A body is *perfectly elastic* when it has the property of *resisting* a given deformation equally, however that deformation may have been produced, whether slowly or suddenly, &c. All bodies, however, have *different elasticities* at different temperatures, and if the deformation is so sudden as to change the temperature of the body and so alter its *resistance* to deformation, this is not considered as showing it to be imperfectly elastic.

In contradistinction to the foregoing physical definition of elasticity, Dr. Campbell says that when the term is applied to the lungs it signifies "their power of recovering their form after being stretched." This is what the Campbell physicist says, it is a mere property of a certain form of matter by which it has the power of recovering its original form after being stretched, but I prefer the other authority who says that it also signifies a *resistance to stretching or other deformation*.

It is only certain forms of matter which possess this property of *elasticity*, so it is not universal, like gravity. Surely Dr. Campbell will admit that we can measure the force of elasticity even more easily than we can measure the force of gravity. It is not sufficient for him to tell me that it is merely a property of matter, that it is a "power of recovering form after being stretched." The same power that enables elastic matter to recover form after being stretched surely offers an equivalent *resistance* to the process of stretching. This force of *elasticity* can be as easily estimated by the *resistance* as by the *power of recovery*. We can estimate the force of gravity in different latitudes and at different levels above the sea, and it is the force of gravity, rather than any abstract idea of it being a property of matter, which interests us. The same can be said of *elasticity*. How do I know that a collapsed lung is elastic if I do not stretch it? I not only want to know if it be *elastic* but I want to know how perfect is the elasticity. If I stretch the lung to find this out Dr. Campbell tells me: Oh, you are only making the lung *taut*; stop your stretching and you will see the *elasticity*. I reply that I am doing a great deal more: I am finding out the lung's capacity for being stretched and its resistance to stretching; consequently I am finding out the elasticity and the force of the elasticity.

"The elasticity of the lungs does not, as Sir James Barr assumes, rise and fall as these organs expand and contract in respiration, but remains the same. What does rise and fall under these conditions is the pull which the lungs exert on the visceral pleura." If this language means anything it means that the lungs contain a certain amount of elastic tissue in virtue of which they possess the abstract property of elasticity, and as this elastic tissue remains the same whether they are stretched or collapsed their state of tension or tautness has nothing to do with their elasticity. He seems to forget that if they are overstretched as in emphysema or long collapsed as in pleural effusion they lose their elasticity. It is not with any abstract property in the lungs called elasticity but with the manifestation of the force of their elasticity with which we have got to deal. What causes the pull which the lungs exert on the visceral pleura but their elasticity? Dr. Campbell says it is their *tautness*. The lungs might remain stretched when they lost their elasticity, but they would not remain taut without their elasticity. I shall deal with his fibroid tissue later.

Take a perfectly elastic body like air and see how its elasticity does not remain constant, but rises and falls under varying circumstances; it exercises a force equal to that by which it is itself compressed, and with every rise of a degree of temperature there is an increase of elastic force, yet, reasoning from analogy, I suppose, Dr. Campbell would say that the elasticity was a mere property of the air which like that of the lungs "remains the same, but the rise and fall was only in the tautness of the atmosphere."

Now for some more extraordinary reasoning from this writer. He quickly drops the negation called "suction" which he had elevated into a constant force "which sucks blood into the heart. ..... I should not, however, have called attention to Sir James Barr's ambiguous employment of this term—few writers are guiltless of ambiguity—were it not that he assumes, or appears to assume, that the suction, or let us say traction, which the lungs exert on the circumjacent parts is necessarily bound up with their elasticity. Such, as I pointed out in my letter, is not the case. This traction is in direct proportion to the degree to which the lungs are rendered taut—for the more taut the pulmonary tissue the greater is the tug exerted on the visceral pleura—but comparatively non-elastic lungs, such as those seamed with scar-tissue, are capable of being rendered more taut, and thus of exerting more traction on circumjacent parts than normal, highly elastic lungs."

This reasoning is that of the academician in his study and not that of the clinician who views facts and reasons therefrom. I shall now proceed to prick the bubble. When a ship is riding at anchor and the strain constant a comparatively non-elastic chain answers admirably, but when the strain is variable, as when a ship is being moored, the hawser is made of highly elastic hemp; if a chain were used there would be constant danger of it snapping or of the ship being damaged by bumps against the quay. The elastic rope offers resistance to being stretched and when the tug of the ship ceases the elasticity gradually pulls the vessel back to its former position. The elastic tension of more or less stretched healthy lungs maintains a constant intrapleural or intrathoracic negative pressure both during quiet inspiration and expiration and thus allows the blood to be driven in at all stages of respiration, but non-elastic fibroid lungs cannot be *taut* both in inspiration and expiration and therefore a constant negative pressure cannot thus be maintained. The idea of the slow shrinkage of fibroid tissue keeping up a constant tautness is too absurd to demand attention; if the cord be shortened it may more readily be made taut, but whether short or long there must be an intermittent

variation in the tautness of those non-elastic lungs during each respiration.

In his former letter he assumed the non-adherence of the pleuræ and we now get several other assumptions; I should have preferred facts. He thinks his "purpose is equally well served by taking an actual case in which the pleuræ are adherent. In such a case the traction which the lungs exert on surrounding structures is considerably in excess of the normal and this excess is partly due to the contraction of the scar-tissue but still more to the preponderating action of the inspiratory muscles." I think he might offer some proof of all these statements, and this he tries to do by saying that "in fibroid phthisis the inspiratory muscles do act powerfully, as he can assert from personal observation," but this is no proof that there is increased *tautness* of the lungs and consequent lowered intrathoracic pressure. In asthma and emphysema the inspiratory muscles, both ordinary and extraordinary, may pull and tug and struggle and strive to get air into the chest, but the whole time the intrathoracic pressure may be positive, and Dr. Harry Campbell might tug and pull and push at Cleopatra's Needle till he was black in the face, but he would not make the slightest impression on it. In fibroid lungs there may be a slight fall in the intrathoracic pressure during inspiration, but in advanced cases there is nearly always a positive pressure in expiration and then the blood is not "sucked in." The variations in such pressures only amount to a few millimetres of mercury. What an enormous difference there is between this and the "suction" of healthy elastic lungs. Dr. Campbell ought to be able to produce in Müller's experiment a negative intrathoracic pressure of 70 or 80 millimetres of mercury and a person with fibroid lungs could not do a tenth part of this. What is the use of discussing why a fish should not displace water or how strongly acting inspiratory muscles drag out the chest and with it make *taut* the adherent lungs which thus exert "more traction on circumjacent parts than normal highly elastic lungs." Try and you will find that the fish does displace water, and the lungs are not taut, and the intrathoracic pressure is not lowered. When Sir Frederick Bramwell and some other members of the capital sentences committee discovered that ropes stretch much more than is usually anticipated, and that there is great variation in the stretch of different ropes according to their constitution, and the amount of strain to which they are submitted, and also in the same rope in different circumstances and according to the amount of moisture which it contains, I was asked by the Home Office if I could devise a method of estimating the elasticity of any rope. I did not retire to my study and work out the coefficient of elasticity and what should but what probably would not happen. I determined the *vis viva* or energy which I considered necessary, and then under a strain of a given number of foot-pounds I determined the stretch, and I had no difficulty in devising a method of measuring the length of unstretched rope which would allow of a given energy. So far as I know, my method is still in force, at least, it was when I left the prison service.

He again says that "in many cases of fibroid phthisis the mean size of the thorax is increased, and this in spite of the fact that the lungs are less than normally yielding to a stretching force. How could such an increase be effected but by supernormal activity of the inspiratory muscles?" I always thought that fibroid tissue occupied less space than the portion of the lung which it replaced. I am afraid there is some confusion in Dr. Campbell's mind between fibroid tissue and the accompanying emphysema. We are not at present discussing the causes of emphysema, but only Dr. Campbell's non-existent increased tautness of fibroid lungs, so we need not pursue this point further, but I might refer Dr. Campbell to the extremities and ask him to inquire why his heightened tautness of the lungs should allow the finger ends to become bulbous.

He says: "What, I would ask, has the average intrapulmonary pressure got to do with the stretching of the lungs when the pleuræ are adherent? Manifestly nothing whatever." The question and answer coming from a physicist are really very funny. Does he not know that whether the pleuræ are adherent or not the thoracic parietes intervene between the external atmosphere and the lungs, and any force which expands the thorax beyond the expansile power of the lungs must exercise a power of 15 pounds to the square inch, and this the inspiratory muscles could not do over such a large surface as the chest though they tugged and pulled like Dr. Campbell at Cleopatra's needle? The inspiratory muscles, like Dr. Campbell, often expend a lot of useless energy. How often do we grieve at the struggles of a poor asthmatic doing nothing? Regarding his remarks about the piece of cord, the root of the lung, the visceral pleura, &c., he forgets that every time the cord is stretched in inspiration it is relaxed in expiration; healthy elastic lungs remain always elastic and taut and in direct proportion to the manifestation of their elasticity their tautness and the intra-thoracic negative pressure are increased.

I shall not now dwell on his remarks on his interesting lectures to which I referred, as I shall probably read them again when I get more leisure—not having done so since 1904—but he need not flatter himself that they have met with general acceptance because they have hitherto passed uncriticised, though I think this is not strictly accurate, because I believe, if my memory serve me rightly, and it does not often fail me, that about July, 1904, I expressed to Dr. Campbell a somewhat similar opinion to that recorded by me in your pages. *Hinc illæ lachrymæ.* Notwithstanding Dr. Harry Campbell, the tautness of the lungs depends on their elasticity and the pressure of the air within them, hence I have arrived at the point from which I started, the winning post. *Magna est veritas, et prævalebit.* I am, Sir, yours faithfully,

Liverpool, Jan. 12th, 1908. JAMES BARR.

To the Editor of THE LANCET.

SIR,—In the discussion which has lately taken place under the above heading in your columns between Sir James Barr and Dr. Harry Campbell it appears to me, as in so many debated subjects, there is something to be said from both points of view. The question would, however, be materially simplified by defining exactly what is meant by "elasticity" before proceeding to discuss it. Elasticity is the property of a substance in virtue of which it tends to return to its original form and condition after distortion by a force; and it is measured quantitatively by the amount of force required to produce a given distortion in a given volume, or unit, of the substance. Thus steel is more elastic than ivory, and ivory than rubber. Rubber yields considerably to a small force and is therefore comparatively inelastic. It possesses the quality of elasticity to a striking degree but in a low measure.

It is important to remember that elasticity is a property fixed in amount for any substance. Distortion may render it evident but does not increase it. Like moral qualities in man, temptations may exhibit them, but the tried man was a gentleman or honourable before his trials, and if the latter be doubled he is not double the gentleman or double the saint. Sir James Barr is certainly in error where he says in his letter of Dec. 21st, "The more taut or stretched (the lung) the greater will be its elasticity or tendency to recover its form after being stretched." Its elasticity and tendency to recover cannot be increased by stretching; it was inherent in it and fixed in quantity from the first. The tendency of a cat to return home is as great when asleep on the hearth as when lost in the woods; and the unstretched lung of an unborn babe is as elastic as that of the expanded lung of the newly born infant. In the one case the elasticity is dormant, and in the other called into play, but increased *never*.

In considering the forces producing a negative pressure in the pleural sacs there is less objection to Sir James Barr's statements: "In health there is a slight negative pressure in the pleuræ owing to the elasticity of the lungs," and "the elasticity of the lungs tends to separate the pleural surfaces." It is, however, to these statements Dr. Harry Campbell so strongly objects, apparently because of the very restricted sense in which they are true. When an infant first breathes it is the expansion of the chest walls under muscular action which tends to create an intrapleural space of lowered pressure and into this the lung simultaneously expands, because the pressure of the air entering by the windpipe into the lungs is greater than the reduced pressure beneath the thoracic walls by the amount the muscular inspirations can reduce it. In this way the negative pressure in the pleural sacs is created by muscular effort and not by elastic recoil of the lungs. It would be even greater, as Dr. Campbell contends, if the lungs did not expand. It is their expansion which limits the fall of pressure in the pleural sacs. By following the chest expansion the lungs allow the visceral pleura to press on the parietal with a force equal to the whole atmospheric pressure, less that which the elastic recoil of the lungs can support and neutralise.

The force of elastic recoil of the lungs therefore measures the limit of pressure fall in the pleural sacs which the thoracic expansion can effect. If the lungs have but little elastic recoil and stretch easily very little negative pressure can be produced by the thorax on inspiration; if the coefficient of elasticity be great and the lungs have considerable elastic recoil the inspiratory muscles expanding the thorax have something to pull against and can produce greater negative pressure; if the lungs be comparatively rigid the whole force of the inspiratory muscles can be directly expended on reducing the intrapleural pressure. In this sense Dr. Campbell's contention seems to me physically correct.

On the other hand, there are conditions in which Sir James Barr is correct likewise. For consider the thorax and its respiratory muscles at rest. The lungs remain stretched; they support by their elastic recoil a certain fraction of atmospheric pressure to which the intrapleural space (if space it may be called) is not subjected in consequence. In that sense, as Sir James Barr states, "there is a slight negative pressure in the pleuræ owing to the elasticity of the lungs." Why all new repair elastic substance in the lungs is laid down in a stretched condition is difficult to see, though the utility of it is obvious. One would have imagined that the elastic tissue would have arranged to be at rest when the thorax was at rest, but it strangely chooses, from birth onwards, never to assume the unstretched condition. There is, therefore, a residual negative pressure for which the pleural sacs are indebted to the elasticity of the lungs and the opposing rigidity of the thorax. For the rest, the active and greater falls, they are indebted to the muscular efforts of the thorax and diaphragm and are distinct losers by the comparatively low elastic recoil of the lungs themselves.

I am, Sir, yours faithfully,

Mentone, Jan. 16th, 1908. D. W. SAMWAYS.

BRITISH SHIP SURGEONS' ASSOCIATION.

To the Editor of THE LANCET.

SIR,—May we through your valuable journal issue a letter of welcome to all members of the medical profession interested in the formation of the above association? A meeting has been arranged to take place on Monday, Jan. 27th, at 8 P.M., at the Medical Graduates' College and Polyclinic, 22, Chenies-street, Gower-street, London, W., and we hope for a large and representative gathering. The object of such an association has been given in former issues and ship surgeons are almost unanimous as to its need. As some of us from the north are coming at great inconvenience to our practices we do hope that ex-ship surgeons and others now practising in or near the metropolis will do their best to attend.

I am, Sir, yours faithfully,

G. METCALFE SHARPE, Hon. Sec.,

Jan. 20th, 1908. Late Surgeon Cunard and P. and O. Companies.

LICENTIATES IN MIDWIFERY.

To the Editor of THE LANCET.

SIR,—The annotation upon this subject in the current number of THE LANCET suggests that it would not be inopportune to relate a stage in the history of medical politics in this country, particularly with respect to the education of would-be women medical practitioners. In 1852 the Royal College of Surgeons of England sought and gained in a supplementary charter power to examine "persons" for a diploma—Licentiate in Midwifery of the Royal College of Surgeons of England, commonly abbreviated to "L.M." It is said that the inclusive word "persons" in Clause 17 of the new charter was introduced deliberately. Under Schedule A (4) of the Medical Act, 1858, such persons might be "registered" with this single qualification. It was, however, urged by some that the "L.M." diploma was only to be issued to men who were already otherwise qualified. The Medical Act, 1875, sec. 2, did not vary the position. This diploma was suppressed in 1876. In 1872 the King's and Queen's Colleges (now the Royal College) of Physicians in Ireland made their midwifery licence registrable; in 1874 they granted diplomas to midwives. It was not, of course, until the Medical Act, 1886, sec. 2, became law that a triple qualification in medicine, surgery, and midwifery was essential prior to the registration of the name of a would-be medical practitioner.

The Female Medical Society (1862–72) was founded "to provide educated women with proper facilities for learning the theory and practice of midwifery and the accessory branches of medical science." The Ladies' Obstetrical College (Great Portland-street) was founded in 1873. In 1875 Miss Sophia Jex-Blake, Miss Edith Pechey, and Mrs. Thorne, having been informed of an opinion of counsel given to the College of Surgeons as to the scope of Clause 17 of their enlarged charter, and having fulfilled all precedent requirements, claimed to be "persons" who must be examined by the Royal College of Surgeons for the licence in midwifery. In this way they hoped to secure admission to the Medical Register. The midwifery board of examiners of the College, led by the late Dr. Robert Barnes, resigned in protest, thus postponing in January, 1876, the examination *sine die*. It has never since been conducted. The Obstetrical Society of London concurred with this practical protest. The late Dr. Robert Barnes, writing to me in October, 1906, said with respect to this incident: "I may say that I rescued the College and the profession from the disgrace of issuing a barren midwifery licence."

I am, Sir, yours faithfully,

Adelphi-terrace, W.C., Jan. 13th, 1908. STANLEY B. ATKINSON.

A CASE OF "DIPHTHERIA OF THE SKIN."

To the Editor of THE LANCET.

SIR,—Dr. J. G. Hare is to be congratulated in clearing up the nature of Dr. Alan B. Slater's remarkable case of cutaneous diphtheria as reported in THE LANCET of Jan. 4th. The case raises some interesting pathological issues, particularly in regard to the underlying cause of a diphtherial infection so extensive. It is, however, perhaps unnecessary to infer such an unusual course of events as that suggested by Dr. Slater in his ingenious explanation. Diphtheria bacilli do not spread far and wide *viâ* the superficial lymphatics, but they are conveyed at times from one abraded surface to another by auto-inoculation. Moreover, while neuritis is an ordinary and specific feature of diphtheria, herpes of the neuritic type is rare in that disease—is, in fact, commoner in other infections, notably scarlet fever, which present the rash as a pure complication.

The peculiar characteristics of the case being the widespread distribution of the lesions and their long duration, it seems to me that if auto-inoculation be accepted an explanation based on established pathological facts is forthcoming. It is well known that nurses with slight abrasions of the fingers may, when working in diphtheria wards, develop a localised diphtherial infection and that a permanent cure may not be obtained for weeks or even months if antitoxin is not given. It may happen that more than one finger is infected, and there seems to be no reason why this modified form of diphtherial lesion should be restricted in distribution where the inoculable points are multiple. Given, then, that the original conjunctivitis and vulvitis were wholly or partly septic in nature, it might well be that the patient developed a spreading septic rash such as is often seen under such conditions in children. The cutaneous abrasions would offer points of inoculation, and the diphtheria bacillus, established anywhere from mixed infection of the eye or vulva or from an outside source, would be readily carried in the discharges from one area to another.

Now that Dr. Hare has proved bacteriologically the nature of one case, there is the interesting possibility that other obstinate skin affections of a similar type may also turn out to be diphtherial.

I am, Sir, yours faithfully,

JOHN BIERNACKI.

Plaistow Hospital, London, E., Jan. 12th, 1908.

ACUTE PULMONARY ŒDEMA.

To the Editor of THE LANCET.

SIR,—With reference to the interest lately awakened by the able dissertation upon acute pulmonary œdema by Dr. Leonard Williams in THE LANCET of Dec. 7th, 1907, may I be permitted to add my humble testimony of what I consider to be a most remarkable and typical example of the condition. At 10 P.M. last night I was summoned to see a man who, I was told, had been taken suddenly and severely ill. I immediately set out and arrived on the scene within five minutes of the summons to find the patient dead.

The history was as follows. The patient, a man, aged 48 years, had been at his work all day apparently in the best

of health excepting a slight dry cough from which he had been suffering for the past week or ten days. He returned home a little after 6 P.M. and partook of his usual tea, making a good supper a little before 9 previous to turning in for the night at about 9.30 P.M., as from the nature of his occupation he was obliged to keep early hours. At a few minutes to 10 he started out of bed, remarking to his wife that he "felt choked" and ran into the front sitting-room. Here he sank on to a chair and evidently still experiencing intense agony in this situation rolled on to the floor and expired. His intensely cyanosed appearance on rising out of bed so alarmed his wife that I was sent for immediately and arrived at the house it is estimated less than ten minutes after the time when he left his bed. The remarkable severity and rapid dissolution in this case call, I think, for special notice as the experience must be a very rare one. The appearance of the body when first seen by me was as follows. The face was intensely livid and wore an expression of agony, the pupils were very widely dilated, the body was of a natural warmth, supplé, muscular, and well nourished and the thorax well formed. Even at this time an abundance of white foam was welling from the mouth and nostrils and there was an escape of a considerable amount of pinkish serous fluid from the mouth. I made the necropsy to-day at 3 P.M., at which the following additional appearances were observed. Post-mortem lividity was strongly marked and the veins all over the surface of the body were greatly distended with very dark blood. The frothy material was still issuing from the nostrils and mouth but the flow of serous fluid had ceased. Each pleural cavity contained about half a pint of reddish serous fluid. The lungs were somewhat voluminous from commencing emphysema at the apex and anterior borders and on division of the bronchi discharged an enormous quantity, over three pints, of reddish serous and frothy fluid, while this could also be squeezed from the lung through the bronchi and all cut surfaces in abundance, the lung tissue then assuming a vesicular character. The larger bronchi and trachea were clear but somewhat congested and otherwise the lung tissue appeared normal. The left ventricle was markedly hypertrophied, the heart weighing 19 ounces, and the aortic valves were somewhat thickened, distorted, and incompetent. The other valves were apparently normal. The aorta was the seat of well-marked atheromatous changes, while the radial and temporal arteries also manifested pronounced thickening and tortuosity. The other organs of the body were in an apparently healthy condition. Microscopically no characteristic abnormal appearance can be detected in the lung. The patient had not been under any treatment. No history of heart or kidney trouble could be obtained. I expressed the opinion that death was due to the sudden strain thrown upon the heart by the rapid engorgement of the lungs.

I am, Sir, yours faithfully,

G. H. C. LUMSDEN, M.B. Aberd.

Brighton, Jan. 17th, 1908.

To the Editor of THE LANCET.

SIR,—In Zola's powerful book "Fécondité" there is a graphic description of the sudden illness of a perfectly healthy young woman whose symptoms began at bedtime, following a wetting from a rain-storm in the afternoon, and who died after intense suffering at 7 o'clock in the morning, "d'une congestion pulmonaire." When the book was published eight years ago a medical friend discussed this case with me. As neither of us was familiar with an acute pneumonia or pulmonary congestion which would cause death in a hitherto healthy adult within seven or eight hours we were at first inclined to class this description among the errors of novelists writing on subjects of which they are ignorant; remembering, however, the notorious accuracy of M. Zola and the mastery of technical detail which he always acquired of any subject on which he undertook to write, and having, moreover, both been in practice sufficiently long to have learnt that we did not know everything, we decided that the novelist was probably correct and our own limited experience at fault.

I now learn that the case described corresponds accurately with those cases of rapidly fatal "acute pulmonary œdema" which have recently been recorded by correspondents in your columns. The clinical picture of the illness drawn by M. Zola is most vivid and accurate and is to be found on pp. 557 to 559 of the ordinary French edition. Perhaps the disease is better known in France than in England, for M. Zola writes of it as of something not very uncommon. The medical interest, in other respects, of this striking book is such, and the moral it teaches so impressive, that all might read it with advantage.

I am, Sir, yours faithfully,

Jan. 11th, 1908. C. K.

THE SOCIETY OF MEDICAL PHONOGRAPHERS.

To the Editor of THE LANCET.

SIR,—It is many years since the Society of Medical Phonographers was last mentioned in your columns and we shall be glad if you will allow us to direct attention to the fact that it still exists and still issues its medical periodical in lithographed phonetic shorthand. We believe that many students and members of the profession are ignorant of the society and its efforts to promote the effective use of shorthand in medicine, both in practical work and in research. The honorary secretary will be glad to furnish particulars of the society to any members of the profession or students who may desire to join it.

We are, Sir, yours faithfully,

WILLIAM R. GOWERS, President.
CHARLES W. CATHCART, } Vice-Presidents.
G. SIMS WOODHEAD, }
OSKAR C. GRUNER, Honorary Secretary,
Pathological Department, General Infirmary, Leeds.

January, 1908.

THE CAUSE OF THE PREVALENCE OF ADENOIDS.

To the Editor of THE LANCET.

SIR,—If reliable statistics were available it would, I believe, be conclusively proved that during the last 30 years there has been a remarkable increase in the number of children affected with adenoids. That adenoids have always existed may, no doubt, be correctly inferred from indirect evidence, but on the other hand, evidence has been brought forward to show that until recent years it must have been quite a rare disease. However, as regards what exists at present, I would mention that it is difficult to find evidence of many cases indicating the previous existence of adenoids among people of 40 years of age and upwards, whereas it seems to be comparatively rare to find a family of children without at least one of its members having suffered from the disease. It is not my intention, however, to compare the past with the present. What I want to do is simply to state that without any attempt at selection I took a number of families whose habits I knew with regard to the keeping of open windows in the sleeping apartments of their children. Of those who kept the windows shut at night there were five families, having 26 children in all, and not one of these 26 children had ever suffered from adenoids. While of five families, having 19 children in all, who kept open windows at night throughout the year, eight of these children had suffered from adenoids sufficiently badly to have required operation. Now I do not put any importance on these figures, they are too few to be of any particular value beyond being very suggestive, and it was not on account of them that I was led to think that open windows at night might be an important factor in the causation of the prevalence of the disease. I am writing because I am not in a position to get as full statistics on the subject as seems desirable and I should like particularly to know the effect of cold and damp night air, such as we usually have in England, in the production of adenoids and of its value or otherwise in the treatment of an ordinary cold in the head.

I am, Sir, yours faithfully,

Wimpole-street, W., Jan. 20th, 1908. J. SIM WALLACE.

THE INFECTIVITY OF CANCER.

To the Editor of THE LANCET.

SIR,—I very much regret to find from his letter addressed to you in THE LANCET of Jan. 18th, p. 188, that I have inadvertently misrepresented Dr. Bashford by attributing to him instead of to Messrs. Farmer, Moore, and Walker the statement reported in the *British Medical Journal* of Jan. 30th, 1904, that "malignant new growths were virtually reproductive tissue arising in abnormal situations" and I am

very glad to be assured that Dr. Bashford dissociates himself from such a conclusion. I find, however, that four months after Dr. Bashford's and Dr. Murray's paper, which contained the above quotation, was read Professor Farmer at a meeting of the Pathological Society of London held on May 17th, 1904, and reported in the *British Medical Journal* of May 21st, 1904, p. 1196, observed "that although the authors" (Messrs. Farmer, Moore, and Walker) "had been credited with the view that they had arrived at an explanation of the phenomena of carcinoma they disclaimed this; the relation between heterotype mitosis and the life-history of carcinoma they did not profess to explain."

I am, Sir, yours faithfully,

Driffield, E. Yorks, Jan. 18th, 1908. A. T. BRAND.

DEATH UNDER AN ANÆSTHETIC.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Dec. 14th, 1907, p. 1714, is a report of an inquest upon a case of death under an anæsthetic upon which I gave evidence as to the post-mortem appearances. Amongst other remarks I am reported to have said that I considered coughing might have acted as a "shock" to the heart. If I used the word "shock" it must have been thoughtlessly and in ignorance of the fact that the word might appear in print. My opinion is that the deep inspiration which follows a forcible expiration may affect the heart and that the heart—judging from the clinical evidence—was thus affected in this particular case.

It has never seemed to me that adhesions of the pleura or pericardium are important factors in the production of the so-called "pulsus paradoxus." Yet in this case it may be of interest to mention that firm adhesions obliterated both the right and the left pleural cavities. The consequent inability of the lungs to advance over the heart during inspiration may have aided to produce a distension of the heart which, weakened by the anæsthetic and defective aeration of the blood—owing to the presence of thick muco-pus in the bronchial tubes—proved fatal.

I am, Sir, yours faithfully,

Jan. 23rd, 1908. THEODORE FISHER.

THE PRESENT PROSPECTS OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—Every thinking person must feel that the present condition of affairs requires serious consideration. Have we passed the zenith of our fame and power? Has rapid progress brought with it the seeds of decay and impotence? If it is true, as has been asserted, that the average income of a medical man is under £250 a year, the number of parents and guardians anxious to send their children and wards to the profession is certain to decrease. Young men are seldom tempted to a medical career by the fervid enthusiasm which determines to an ecclesiastical vocation. Medicine shares none of the high prizes of the law. The most that the majority of its members can hope for is a moderate competence with a slender provision for old age. It is probable that many causes acting concurrently have combined to bring about the present state of affairs and I propose to comment briefly on some of them.

The agricultural population shows an increasing tendency to flock to the towns and, as Canon Jessop has remarked, the old village life has all faded away. Even in districts in which corn and other crops are still cultivated extensively improved agricultural implements have diminished the demand for labour and the railways have brought all except the remotest districts into touch with towns where patients can consult some medical man renowned for special knowledge of their ailments. It is therefore clear that large districts will require fewer medical men in future and will afford poorer remuneration. Here we are face to face with causes entirely non-medical and most unlikely to change, except for the worse.

The inevitable growth and development of specialism which increased knowledge has produced have aided, no doubt, in the reduction of the income of the general practitioner, but other causes are, in my opinion, as powerful, if not more so, in London and other very large towns. One of these is the abuse of medical charities, for it is a matter of common knowledge that thousands of persons well able to pay an ordinary fee prefer to present themselves at the out-patient department of some great hospital. Another difficulty with which we have to contend is the fact that quackery displays everywhere her various illusions to cheat the hopes and prey on the weaknesses of mankind, while faith-healing, crystal gazing, and palmistry are rampant. We know from the sixth satire of Juvenal that pretenders of a like kind existed in ancient Rome:—

> "Frontemque manumque
> Praebebit vati crebrum poppysma roganti."

It must not be forgotten that as a profession we are placed at a great disadvantage as compared with other callings, because the sciences on which our art is based are to a considerable extent occult sciences to even the majority of the most cultivated of the laity. The proposition that with the advance of hygiene disease will fade away is in all probability no more than a beautiful dream, "born of hope and destined to die of experience." Preventive medicine may indeed arrest the progress of some epidemics; though, as in the matter of the vaccination laws, it seems doubtful whether with the advancing wave of democratic ideas there will not be an increased disinclination to submit to the restraints which the medical profession may recommend for the physical welfare of the community.

In the lives of professions, as in the lives of states, of senates, of individuals, there are periods for pause and thought. The present time seems to me a desirable one in the life of medicine. Never at any period, I believe, have the heads of medicine and surgery been more faithful workers, more true to nature, or have conferred larger benefits on the human race. To their wisdom and guidance I trust that the difficulties of the present may be removed and that in the future the triumphs of the past may become even greater and brighter than before.

I am, Sir, yours faithfully,

Jan. 20th, 1908. INSPECTOR-GENERAL.

CIVIL SANITARY REFORM IN INDIA.

(FROM A SPECIAL CORRESPONDENT.)

A MOST important letter has been addressed by the Government of India to all local governments and administrations for their opinion on the subject of sanitary reforms in civil areas. In the past practically no attention to this important subject has been paid, if we except the Presidency capitals and a few of the larger cities. The letter now addressed indicates the nature and direction of the advance which in the view of the Government of India (under the advice of the new sanitary commissioner who was appointed in 1904) should now be made towards the reorganisation of the sanitary department. The Government of India now suggests that the posts of deputy sanitary commissioners should not exclusively be reserved for officers of the Indian Medical Services but should be thrown open to all medical officers of health who must in all cases possess the D.P.H. diploma. The present inadequacy of the staff of medical officers of health is pointed out and it is suggested that the proposed new sanitary service will offer a suitable and congenial career for educated Indians who have been trained in Europe, the latter essential being absolutely necessary. In towns with a population between 20,000 and 100,000, however, it will be necessary to accept a lower standard of scientific attainments, and such posts may be suitably offered to educated natives of the assistant surgeon class. Here I may remark lies the greatest pitfall of the scheme, as this class of medical practitioners in India are mainly recruited from the Brahmin caste, which sect according to caste prejudices becomes defiled by contact with latrines and the like, so it may be assumed that inspection of such an important source of public health pollution will not be as rigidly performed as it would be by European medical officers of health. The Government of India also suggests that in future medical officers of health from the Indian Medical Service will not be appointed deputy sanitary commissioners unless they have more than seven years' service. Medical officers of health will not be allowed to undertake private practice and their salaries will therefore have to be fixed on a more liberal scale than would otherwise be necessary.

The supervision of the conservancy establishment in municipal towns is in urgent need of reform and it is imperative that steps should be taken to provide efficient

training for sanitary inspectors who should undertake the duties of sanitary supervision which are already performed by inspectors of nuisances in Great Britain. It is rightly urged that medical officers of health will not, and cannot be expected to, undertake work of this subordinate character and that the existing establishments of untrained supervisors and overseers are not able to give the health officer the assistance which he has a right to demand. These men form the connecting link between the health officer and the working labourers of low caste coolie class. The training of these sanitary inspectors is a question that will require very careful consideration. The standard required should be that prescribed by the Royal Sanitary Institute for inspectors of nuisances in England and no doubt arrangements can be made to obtain and to train specially selected men and to issue certificates to successful candidates who must be of good physique, satisfactory character, suitable caste and social status, the last qualification enabling them to move freely among all classes of the population with some degree of authority. To attract men of the right stamp it will be necessary to offer good pay and the Government of India thinks that a scale of salaries rising from Rs.50 to Rs.150 (£3 6*s.* 8*d.* to £10 English equivalent) will probably prove suitable in most provinces.

Finally, the Government of India discusses the question whether the proposed new scheme of medical officers of health and sanitary inspectors should be formed into a regular provincial sanitary service or whether each local authority should be allowed to recruit its own staff independently. The objections urged against the latter course are that a career which is limited to employment by local authorities on uncertain terms and without prospect of pension will not attract candidates of the proper stamp, if, indeed, it attracts any at all, and that the insecurity of tenure will deter men from qualifying for such appointments. The duties of sanitary inspectors of necessity bring them into conflict with members of local authorities, their families and relatives, and if sanitary inspectors are merely servants of local boards they may either neglect their duties in such cases or perform them at the risk of losing their appointments. On the other hand, it may be argued that the creation of a provincial service of sanitary officers will conflict with one of the main principles of local self government and it is urged that in no branch of local administration is local control so necessary as in matters connected with sanitation. The Government of India is convinced that in the case of sanitary officers the certainty of tenure during good conduct must be assured. It will thus be necessary to provide that no medical officer of health or sanitary inspector should be removeable from office without the sanction of the local government in the case of the former, or the sanitary commissioner, or perhaps the sanitary board, in the case of the latter. Regulations somewhat similar to these exist in England and Scotland and are necessary to secure the employment of properly qualified men and to guarantee protection against arbitrary treatment in retaliation for the fearless and efficient performance of duty.

Another part of the administrative machinery touched on by the Government of India in its new scheme is the formation of sanitary boards which would consist of from three to five members, including a senior member of the Civil Service who is in close touch with local administration, the sanitary commissioner and the sanitary engineer as experts, and one or two natives of India, preferably non-officials. Thus direct discussions will be secured between sanitary experts and those who are in a position to appreciate and to represent the attitude and feelings of the general population. The Government of India does not propose to discuss at present the thorny question of sanitation in rural areas. Finally, the question of providing an efficient staff of sanitary engineers has not been overlooked and assurance is given that a separate communication will be made on this matter.

The various suggestions enumerated above are put forward for the careful consideration of local governments and suggestions on some are asked for laying down what specific action they propose to take in order to give effect to the accepted general policy now promulgated of sanitary improvement. It is to be hoped that success will attend this new scheme, the first thorough attempt on the part of the civil authorities in India to place on a sound basis the important question of civil sanitation in its rôle as a prevention of disease. Lieutenant-Colonel J. T. W. Leslie, I.M.S., the present Sanitary Commissioner with the Government of India, is to be congratulated on taking the bull by the horns, and it is to be wished that he will in no way be hampered by financial considerations. Outside the Presidency capitals and a few of the larger cities sanitation may be said to be non-existent, if we except the cantonments of British troops, the latter being mere oases of sanitation in the desert, so to speak, scattered throughout India, and these in most cases are surrounded by mobs of insanitary native bazaars which have sprung up mushroom-like to live on the British soldiers as parasites, fouling his food, air, and environment and infecting him with enteric fever and malaria. With the coöperation of the civil sanitary service as now proposed the sanitary officers of the army will reduce these fell diseases to a minimum and the health efficiency of British troops in India will benefit greatly.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

The Birmingham Housing Reform Association and the Open Spaces Society.

DURING its short but active existence the Birmingham Open Spaces and Playing Fields Society has done excellent work for the city, for it has secured several areas where it was important that breathing space should be acquired, but it has been obvious lately that its work would necessarily overlap with that of the Housing Reform Association and consequently it has been decided to combine the two societies into one under the title of the Birmingham and District Housing Reform and Open Spaces Association. Much work still remains to be done and there can be little doubt that the larger association will work with even greater success than the smaller association attained in the past; therefore the councils of both associations are to be congratulated on the union of their forces.

The Birmingham Ambulance Brigade.

For the third time in succession the Birmingham challenge shield has been won by the Midland Railway division of the Birmingham Corps of the St. John Ambulance Brigade. Councillor Brooks presided at the meeting which was held to celebrate the victory, and in presenting the shield he took occasion to congratulate the whole brigade upon the value and efficiency of its work. The brigade numbers 358 members, and during last year it succoured whilst on public duty 275 cases, and in their private capacities the members have rendered aid to 4398 people. This obviously indicates a large amount of valuable work done at critical moments. 215 members of the brigade have passed the third examination and have received the brigade's medallion, and 46 men have gained the nursing certificate.

Infants in Public-houses.

In addressing a meeting in West Bromwich on social questions Dr. A. E. W. Hazel, M.P., once again drew public attention to the Chief Constable of Birmingham's statement that not a few women take young children into public-houses and some of them have been seen to give beer to infants for the purpose of making them sleepy and quiet. This is one of those glaring disgraces which might be promptly and effectively dealt with by legislation, for surely no sane person would oppose a measure which would make such abominable behaviour illegal, and every right-minded individual will hope, with Dr. Hazel, that the Government will act quickly in a matter which brooks no delay.

The Regulations Regarding Brass Castings.

The proposed regulations drafted with the object of preventing caster's ague are looked upon with great disfavour in Walsall, where it is contended that caster's ague is unknown, the conditions being quite different from those existing in Birmingham. The manufacturers characterise the regulations as arbitrary and unnecessary so far as Walsall is concerned, and they hope that alternative and more reasonable and acceptable regulations will be formulated.

The Water supply and the Rainfall.

Apparently we may look forward to a dry summer with equanimity, for the rainfall in the Elan Valley during the past year has been quite up to the average, 61·36 inches, and at Whitton and Whitacre, as we had reason to expect, the fall has been above the average, exceeding it at Whitton

by 3·27 inches and at Whitacre by 2·76 inches. To a certain extent this satisfactory result on the gathering grounds whence our water-supply is derived may be considered as a compensation for the past dreary summer.

Medical Inspection of Schools in Worcestershire.

If the conditions in Worcestershire are to be taken as an indication of the terms on which the medical officers engaged for the inspection of school children will have to work and of the work which they will have to do, then it may be admitted that the pay will not be over-generous and the work if it is well done will be heavy. The sanitary subcommittee appointed to report upon the best method of carrying out the administrative provisions of the Education Act of 1907 in Worcestershire recommended that the education county, which contains 251 public elementary schools, should be divided into three districts, in the largest of which the school children would average 18,471 and in the smallest 12,164. The subcommittee was of the opinion that a medical inspector should be appointed for each district and that the work should be supervised by the county medical officer. It proposed that the county medical officer's salary should be increased by £100 per annum, that one of the inspectors should receive £500 per annum, rising to £600, and the other two £350, rising to £400, and it suggested that one of the medical inspectors should be a woman. The report was subjected to a considerable amount of criticism and opposition and it was eventually decided that the education committee should recommend the council to appoint three medical inspectors who should commence with salaries of £250, rising to £300. This does not seem too much for the work to be done, yet the cost to the county will be very considerable and there seems every probability that the scheme will have to be enlarged if satisfactory results of any substantial character are to be looked for. Apparently, according to the reports, the scheme makes no provision for the fees of specialists, yet numerous cases must be met with in which specialists' opinion will be invaluable and will no doubt have to be obtained. It will be well to expect that the early estimates of cost for all schemes of this nature will prove insufficient and to make up our minds to face considerably increased taxation, whilst it is to be hoped that the results may give a satisfactory return for the expenditure. Expression was given to fear of increasing expenditure when the report was presented to the council. Objection was made to the appointment of whole-time inspectors and the report was referred back to the committee for further consideration. What the committee will do is not clear, for no reasonable person can expect that the work required by the Act can be properly done by district medical officers of health who are already burdened with duties.

Jan. 21st.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.

Carmarthenshire Water-supply.

FOLLOWING the example of the steam coal areas of Glamorgan it is proposed in the anthracite district of Carmarthen to go away from the coal district for a supply of water. This eventuality was foreshadowed in 1904 when the Local Government Board refused to sanction a scheme of the Llanelly rural district council for the supply of Burry Port, where there is a population of about 4500, with water obtained from the coal measures. The local authorities cannot be accused of being precipitate in the action now proposed to be taken, for as long ago as 1901 the Carmarthen county council decided to make a representation to the Local Government Board in accordance with the provisions of Section 299 of the Public Health Act, 1875, to the effect that the Llanelly rural district council had made default in enforcing the provisions of that Act.[1] In the coming session of Parliament there will be promoted two Bills, each concerned with securing a supply of water for the district named. In both proposals the supply is to be obtained from the head waters of the river Loughor. The larger undertaking, which is estimated to cost £95,000, is that of the Burry Port urban district council jointly with the Llanelly rural district council. The second scheme, the cost of which is estimated at £32,000, is being put forward by the Ammanford urban district council which has undertaken to supply the adjoining rural district of Llandilo.

[1] THE LANCET, Nov. 2nd, 1901, p. 1231.

Cardiff Water-supply.

The inhabitants of Cardiff are supplied with water from the old red sandstone of the Breconshire Beacons, and in spite of the increase in the size of the town sufficient provision has been made to insure an ample amount both for domestic and municipal purposes. During last year the average daily consumption per head was 27 gallons, of which 11 gallons were for trade and municipal requirements. The revenue from the undertaking is not yet sufficient to meet all the charges and a rate in aid has to be levied. It is anticipated that in a few years the latter will not be necessary. The sum of £280 is paid yearly for the water supplied to the public baths and it has been suggested that when the water in the service reservoirs is running to waste a sufficiently increased amount of water should be supplied to the baths to enable them to be emptied much more frequently than once a week as is the case at present. The proposal is one which should meet with favourable consideration.

Cardiff and the Notification of Births Act.

Notwithstanding the fact that the health committee of the Cardiff corporation recommended the city council not to adopt the Notification of Births Act, the council after some discussion decided that the Act should be adopted. In a special report upon the incidence of infantile mortality in Cardiff which was made by the medical officer of health in January, 1907, Dr. E. Walford urged the employment of qualified health visitors or women inspectors to visit the houses of the poor in which infants are born. Already one such inspector was attached to the health department but her work was hampered owing to the length of time which usually elapsed between the birth and the time of registration. A scheme of voluntary notification of births by the midwives in the town was proposed by Dr. Walford and he suggested a fee of 1*s.* being paid to each midwife who notified a birth within 48 hours of its occurrence. The action of the corporation in adopting the Notification Act will necessitate the appointment of another woman inspector, and that there is sufficient work ready to her hand is evident from the high rate of infantile mortality in some parts of the city. In the third quarter of the four years 1903–06 the rate in the whole of Cardiff was 142 per 1000 births, but in one part of the town it was 178 per 1000, and in another part as high as 189 per 1000.

Proposed Cottage Hospital for Pontypridd.

The populous valleys which spread out almost fan-like from Pontypridd are very ill-provided with hospital accommodation. In the Rhondda valleys there is only one such institution situated at Porth and with accommodation for 13 patients. In the Aberdare valley there are small hospitals at Mountain Ash and at Aberdare, while in the Taff valley there is at Merthyr a well-equipped hospital of 45 beds. Pontypridd has a population approaching 40,000 persons and is the centre of an extensive coal mining district so that the need of a general hospital is apparent. At a public meeting held in the town on Jan. 15th it was decided that the urban district council should be asked to build a small accident hospital and to support it out of the general rates of the town. At Barry the rates have been applied in support of a similar institution for many years.

Medical Officer of Health for Monmouthshire.

At the next meeting of the Monmouthshire county council a proposal will be made to appoint a medical officer of health part of whose duties will be the supervision of the medical examination of the children attending the public elementary schools in the county. The suggested salary is £600 per annum, together with travelling and other expenses. The area of the administrative county is 345,000 acres. About three-fourths of the county is of a rural character and the remainder includes the thickly populated districts of the eastern and western valleys where coal mining operations are extensively carried on. The population of the administrative county is about 250,000 and there is every probability that the number of persons employed in the collieries of the district will increase in the future.

Jan. 21st.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

University of Edinburgh.

THE annual report of the University of Edinburgh for the year 1907 shows that the total number of matriculated students (including 590 women) was 3278, being 79 more than the number for last year, and the highest number reached for 14 years. Of this number 1478 (including 55 women) were enrolled in the Faculty of Medicine, 690, or nearly 47 per cent., belonging to Scotland. Of the remainder 310, or 21 per cent., were from England and Wales; 118 from Ireland; 71 from India; 263, or nearly 18 per cent., from British Colonies; and 26 from foreign countries. These figures show that the proportion of non-Scottish students of medicine is well maintained. The degrees in Arts, Science, and Medicine conferred during 1907 were as follows:—Master of Arts (M.A.), 187 (including 61 women); Bachelor of Science (B.Sc.), 49 (including five women); Doctor of Science (D.Sc.), eight; Bachelor of Medicine and Master of Surgery (M.B., C.M.), two; Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.), 197 (including 16 women); Doctor of Medicine (M.D.), 70 (including three women); and Master of Surgery (Ch.M.), two. The General Council of the University now numbers 10,358. The diploma in Tropical Medicine and Hygiene was conferred on five candidates. The total annual value of the University Fellowships, scholarships, bursaries, and prizes now amounts to about £18,520, including in the Faculty of Medicine £3630. In July approval by His Majesty in Council was intimated of an ordinance of the University Court making important changes in regard to the curriculum and periods of examination for graduation in medicine and surgery. The outstanding features are the increased opportunity given to students for taking each of the four professional examinations in separate sections, and the holding of degree examinations in December as well as in the spring and summer. Another change involved in the new ordinance is the opening of the winter session of medicine about a fortnight earlier than at present—i.e., on or near Oct. 1st. Other two ordinances of the University Court—regulations for the degree of Bachelor of Pharmacy and regulations as to bursaries, &c—have been transmitted to the Privy Council. The only change in the professoriate during the year is that due to the lamented death, which occurred suddenly on Dec. 20th, of Professor Thomas Annandale. Appointed in 1877 as successor to Professor Lister he has long ranked as one of the foremost surgeons and most popular teachers of his time. Dr. W. E. Carnegie Dickson has been appointed lecturer in pathological bacteriology in succession to Dr. J. M. Beattie, now professor of pathology in the University of Sheffield, and Dr. James Arnott, Brigade-Surgeon-Lieutenant-Colonel, I.M.S. (retired), was appointed lecturer in diseases of tropical climates in room of Dr. Andrew Davidson, retired. In the medical building at Teviot-place a new laboratory capable of accommodating 40 students has been provided for the pathology department. Accommodation was again given in August by the University authorities for a scheme of vacation courses in modern languages; also in September for a scheme of post-graduate courses in medicine, held under the joint auspices of the University and the Royal Colleges of Physicians and Surgeons. Both of these schemes proved highly successful.

Lord Lister and the Freedom of Glasgow.

Lord Lister, with Lord Blythswood and Mr. Cameron Corbett, M.P., were enrolled to-day, Tuesday, Jan. 21st, honorary burgesses of the city of Glasgow. The Lord Provost, Sir William Bilsland, having alluded to Lord Lister's connexion with the city as professor of surgery at the University and surgeon to the Royal Infirmary, recalled his lordship's eminent services to mankind as the discoverer of antiseptic surgery. Sir Hector C. Cameron, professor of clinical surgery in the University of Glasgow, one of Lord Lister's former students and his lifelong friend, accepted on Lord Lister's behalf the casket containing the burgess ticket, and read from him a letter recalling his connexion with the University and the city, in the course of which he said: "Having in due time been elected by the managers of the Royal Infirmary as surgeon to that institution, I experienced uniform consideration at their hands when applying to the treatment of wounds the great truth which had been recently revealed by the illustrious Pasteur regarding the nature of fermentative changes in organic substances. That truth, though it seemed to me to shine clear as daylight from Pasteur's writings, was for many years not generally recognised, and thus it was my privilege to witness in my own practice, as the application of the principle became gradually improved, the revelation of pathological truths of fundamental importance and a revolution in practical surgery, and I look upon the years spent in your city as the happiest period in my life. The old infirmary is now giving place to more commodious buildings and, great as must necessarily be the expense in this undertaking, I do not doubt that the proverbial liberality of Glasgow will prove fully equal to the occasion."

Enteric Fever in Glasgow.

A serious outbreak of enteric fever has occurred in the West-end of Glasgow during the latter part of December and the present month. On the occurrence of the first few cases it was found that the patients were all receiving milk from the same dairy. Further investigations revealed the fact that the cart from which the milk was procured received occasional supplies from a farm in the neighbourhood of Glasgow. The medical and sanitary authorities of the city and county thereupon visited the farm where they found a young woman—a member of the household—lying ill in the kitchen bed. She had been ailing from the first week of December and was once visited by a medical man. At the outset she was believed to be suffering from influenza and afterwards the cause of the illness was supposed to be pneumonia. Her symptoms were, however, recognised to be those of enteric fever, her blood giving a positive Widal reaction, and her removal to hospital was at once ordered by the county authorities. Thereafter the farmhouse was thoroughly disinfected and the supply of milk from it was prohibited. Up to the time of writing the number of cases reported in the city from this source is 69, while from the same source cases have been reported in Edinburgh, Uddingston, and Falkirk. There have been several deaths in connexion with the epidemic, one unfortunate case being that of a young man who, while incubating the disease, had gone to Switzerland on holiday and there succumbed to his attack.

Complimentary Dinner to Sir George T. Beatson.

A complimentary dinner was given to Sir George T. Beatson, M.D. Edin., K.C.B., on Jan. 10th, at which there was a large representation of the medical profession and other public men from Glasgow, Edinburgh, and elsewhere who had assembled to do honour to their guest who has recently been invested with the distinction of Knight Commander of the Bath. The Duke of Montrose, who presided, supported the toast of the health of Sir George Beatson, referring to his public-spirited work in connexion with the Scottish National Red Cross Hospital which went to South Africa in 1900 and to his connexion with St. Andrews Ambulance Association and the Western Infirmary of Glasgow. 200 gentlemen were present at the dinner and the proceedings testified throughout to the cordial esteem in which Sir George Beatson is held by his professional colleagues and his fellow-workers.

Jan. 21st.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Tuberculosis Exhibition.

ON Jan. 15th the Tuberculosis Exhibition was opened in Armagh by Sir John Byers, who, in the presence of a crowded meeting in the county court house, gave an address on the formation, objects, and lessons of the exhibition.

Health of Belfast.

The death-rate of Belfast still continues far too high, being for the week ended Jan. 11th 28 per 1000, and 3·8 from the principal zymotic diseases (due to the large number of deaths from measles and whooping-cough). At a meeting of the health committee of the city corporation held on Jan. 16th the superintendent medical officer of health recommended that a steam disinfector should be procured, that one more refuse destructor should be erected, and that the ashbin system should be adopted. A circular has been sent to the butchers of the city by the medical officer of health, urging that meat should be hung at the outside of their shops at such a height as to be out of

reach of contamination by dogs, dust, &c., and if this cannot be done in certain places it was advised to cover the meat with cloth or waterproof covering. It was also decided to notify all the milk purveyors in the city as to the dangerous and common practice of leaving cans with milk on footways during the process of delivering milk to consumers, the cans and their contents being thus liable to pollution. In the future legal proceedings will be taken in such cases. It is interesting and satisfactory to see all the suggestions made at the Belfast Health Commission gradually adopted by the city authorities.

Jan. 21st.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The School for Nurses at the Salpêtrière.

A SCHOOL for training certificated nurses has been open for two months at the Salpêtrière and is the first of the kind in France. The building consists of a main block and two wings. The course at this institution will be one of two years. The pupils live at the school, where each has her own room; they are not allowed to go out on Sundays unless their families live in Paris or unless they have friends known to the administration; they have one month's holiday in the year besides a few days at New Year and Easter. The number is to be 75 in each year, those of the second year passing out for 75 new ones to take their place. There is a general superintendent with two assistants. The pupils spend their mornings in the wards of the hospital in learning their duties practically, working in turn in all the wards, the children's and adults' and those for maternity, infectious, and insane cases. They learn all the details of sick nursing, how to make their patients' beds and their toilet, how to lift them, and so on. They return to the College for *déjeuner* and in the afternoon attend courses of lectures delivered by specially appointed medical men and midwives in the theatre; these courses comprise anatomy, physiology, hygiene, massage, invalid cookery, and all that is included in hospital nursing. The housework and table service are done in turns by the pupils. The uniform is very like that of English nurses. At the end of two years the young women who have successfully passed out of the school, which will be done by examination, will become second-class nurses and will be given their board, lodging, and uniform, and 600 francs a year pay. An intelligent nurse will be able to become a superintendent at the age of 30 years.

Extension of the Hospital for Charity Children.

For some time past the accommodation of this institution has been unable to cope with the calls upon it. To overcome this difficulty the General Council of the Seine has ordered the prefectorial administration to obtain near Paris a piece of land where an extension might be built rapidly and under the best possible hygienic conditions. Such a site has been found not far from Sceaux, in the Antony district. It was occupied by a religious community which has been expelled and the President of the Republic has signed a decree declaring the appropriation of the dwelling of the community to the purposes stated above to be in the public interest. This supplementary building may be opened during the course of next year.

Hæmarthrosis of the Knee.

M. Rochard and M. de Champtaissin communicated to the Surgical Society on Dec. 11th last the result of treating a case of hæmarthrosis of the knee by puncture followed on the next day by active movement against gradually increased resistance. The result was excellent. By increasing progressively the resistance the atrophy likely to result from articular injuries is most effectively met. The treatment has a favourable application to other kinds of effusion into joints.

Resection of the Lower Jaw, with Immediate Mechanical Replacement thereof.

M. Vallas brought this subject before the Surgical Society on Dec. 18th last. After resection of the lower jaw certain complications sometimes occur, such as various forms of ulceration and defects in the dental alignment. M. Vallas has for several years been able to prevent these by fitting an artificial appliance immediately after the operation. This procedure does not give rise to suppuration, and the surgeon can become very expert at fitting suitable appliances to various cases. To get a good result as much tissue as possible must be left and in particular the orbicularis oris which prevents the dribbling of saliva. The classical incision should be extended a little backwards, so that the wound and the scar may not be irritated by the apparatus, and, most important of all, the mouth must be washed out every two hours so that no septic liquid can remain in it.

The Effect of Nervous Stimulants on the Capacity for Work.

At the Academy of Sciences on Jan. 13th M. Armand Gautier made an interesting communication on this subject. He has particularly studied the action of kola on fatigue. In the course of experiments made by giving this drug to a number of horses he found that it apparently diminished fatigue in those that took it. For instance, a horse that ordinarily could go 20 kilometres in an hour went 21 in that time when he had been given the kola. But it was ascertained that at the same time the horse lost more weight than one which had not received any of the stimulant. This shows, according to the learned chemist, that kola, like alcohol, can give the tissues a lash with a whip, but that such energy, artificially provoked, is at the expense of the organism.

A "Rest House" for the French Medical Profession.

For some time past various medical men have had the idea of founding a "rest house" (*maison de retraite*) for French medical men. The idea is now in a fair way to take shape, and upon the initiative of Dr. Courtault and Dr. Nass a committee for consideration of the question has been formed which will hold monthly meetings.

Jan. 21st.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

"Madhouse Administration."

IT is "common knowledge" that Italy cannot cope either with her mendicancy or with her crime. It seems that she is not less impotent to maintain order or even personal safety in her lunatic asylums. Within a few days of each other scenes of violence and even homicide have drawn attention to the "madhouse administration" of two such provincial centres of life, academic and civic, as Turin and Rome herself. The facts are these. In the great Turinese "manicomio" in the Via Giulio, a female inmate, confined to bed by means of powerful straps to prevent her from doing injury to herself or others, contrived to free herself from restraint and at one in the morning, with an iron cross bar taken from her bed, proceeded to the cell of another female also suffering from acute mania and also strapped to her couch, and with two or three well-directed blows fractured the wretched woman's skull and then retired to her own dormitory. These cells form two of a series in a vast corridor of which the only surveillance is intrusted to two women who relieve each other at long intervals. No cry, it seems, on the part of the victim reached the woman on duty, and when the latter entered the cell of the homicide she was suddenly assailed, though providentially the crossbar had been left in the victim's cell. Assistance arrived not a minute too soon, the furious assailant was overpowered and again put under restraint (this time effective), while the victim of her previous aggression on being removed to the hospital was found to have been dead for some hours. The tragic incident of which these details have been made public in the press is now under judicial investigation, while the journals are commenting on the fact that in the Turinese asylum, as in others throughout Italy, the *personnel* is manifestly insufficient. Almost at the same time that this tragedy was in progress the great Roman "manicomio" of the Santo Spirito was the scene of another which, equally savage in detail, was fortunately not fatal. In a ward reserved for the "agitato" (violently excited patients) there was a paralytic man, aged 50 years, who had been giving the attendants trouble. One of these had gone to administer medicine to a patient in another cell, and in his absence a seemingly harmless inmate got access to the paralytic's dormitory and throwing himself upon him with maniacal fury bit off the fleshy part of the nose just above the lip. The victim's cries drew the attendants to the scene. The assailant was overpowered and removed; while the paralytic, if he ever recovers, will bear a hideous disfigurement on his face to his dying day. A week before this deed

of violence a patient in the same asylum having surreptitiously got hold of a copper-lid from the refectory, inflicted a murderous blow with it on another patient's skull, on whom the operation of trephining had to be performed, fortunately in time to save his life. Again the public press, in anticipation of the results of judicial inquiry, is calling loudly for a more effective *personnel*, in numbers as well as in aptitude, if only to bring the "madhouse administration" of Italy up to something like the standard reached and maintained north of the Alps. Dr. Giovanni Mingazzini, professor of neuropathology and psychiatry in the University and director of the Manicomio of Rome, has just intervened in the discussion of this topic and with an authority which few of his Italian contemporaries can claim. Admitting the deplorable incidents all too common in the asylums of Italy he concedes what has been pointed out above—the inadequacy of the *personnel* to the surveillance of the patients. The Roman Manicomio, in particular, is overcrowded—its inmates being far beyond the control of the official attendance, and this he attributes to the practice of the law courts in relegating to the purely medical asylums those criminals who, undoubtedly insane, are better fitted for such special establishments as that of Montelupo in Tuscany than for those asylums where patients are admitted for treatment with a reasonable hope of recovery. As to the clamour raised in some quarters for more stringent restraint, he opposes that system as at once unscientific and ineffective—quoting with approval the dictum of an Italian alienist: "It is not so much the mental disease that instigates the patient to deeds of violence; it is rather the coercion which, depriving him of the power of moving, determines in him a reaction abnormal and antagonistic, exploding in aggression." Paying a high tribute to Dr. Conolly of Hanwell who, nearly 50 years ago, put the non-restraint system in practice, he draws a pathetic picture of the risks incurred by asylum directors in Italy who, fully convinced of the efficacy of non-restraint, have yet to contend with the disadvantages due to the defective *personnel*—to the lack of that sufficiency of attendants which alone makes non-restraint practicable. Dr. Mingazzini's letter, written with ratiocinative force and literary *brio*, ought to have a salutary effect on "asylum reform"—one of Italy's most urgent desiderata.

The Italian "State Quinine" in Greece.

The Greek legislature has just approved on the third reading of a Bill for the introduction of "State quinine" of the type of that existing throughout Italy by the Law of 1900. The Government at Athens has put itself in communication with that of Rome for the supply of the preparation in question as manufactured in the Farmacia Centrale of Turin. Specimens of this product had, it seems, been obtained by the Greek Red Cross Society for purposes of experiment, with the result that the Government at Athens has not only adopted the Italian law as to its use but is about to employ the identical product itself. This imparting of "good offices" by Italy to Greece is of gratifying augury (so says the leading Roman journal) for the future of the two ancient civilisations.

Science and Surgery at Bologna.

The "Mater Universitatum" on the 8th inst. lost, within a few hours of each other, two of her brightest ornaments. One is Professor Domenico Peruzzi, domiciled at Lugo, the distinguished surgeon, *ætatis* 89, known throughout Italy as the first operator to perform laparotomy with a successful result. A colleague of his at Pisa had indeed the priority in the operation but the patient did not recover. The other "scienziato," also an octogenarian, is Professor Paolo Ruffini who, after a brilliant career in the Bologna school, became professor of the higher mathematics at Modena. He had also been a combatant in his country's cause and for his share in the battle at Governolo in 1848 had been exiled by the then ruler of the duchy.

Jan. 17th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

The Influence of General Anæsthetics upon the Blood.

AT a recent meeting of the Vienna Gesellschaft der Aerzte Dr. Reicher communicated the results of a series of experiments which he had made with a view to ascertain the chemical influence of certain anæsthetics (ether, chloroform, and A.C.E. mixture) upon the blood. The experiments were made on dogs which after having been kept under observation for several days were anæsthetised for 90 minutes. Whilst the animals were still under the influence of the anæsthetic blood was withdrawn from the femoral artery and the amount of lecithin, cholesterin, and fat contained in it was ascertained by extraction with a mixture of alcohol and ether; the amount of ammonia, nitrogen, and acetone was also estimated. The latter substance was, moreover, sought for in the expired air. A considerable increase in the amount of fat (up to three times the normal quantity) was found in the blood and acetone was also present in a higher degree, especially in the expired air and in the urine. Dr. Reicher believed that the fat in the blood was sent thereto from the normal deposits of fat in order to neutralise the anæsthetic and thus to spare the red cells. If this fat was not sufficient then the lipoid bodies from the central nervous system were sent into the blood, as was proved by the presence of lecithin and cholesterin. Only a few anæsthetic substances attacked the erythrocytes directly. The alkalescence of the blood was lowered, because the red cells when disintegrated formed acid substances. In alcoholic intoxication oxybutyric acid and acetic acid were demonstrated in the urine. The acetone was derived from the disintegration of fat and albuminoid bodies. Acetonuria and lipæmia were closely related to each other, so that diabetic persons might easily show the latter condition, and general anæsthesia was therefore a dangerous procedure with them. Dr. Reicher commented on the similarity of general anæsthesia and diabetic coma.

Cancer of the Stomach Consequent on Swallowing Caustic Potash.

At a recent meeting of the Vienna Medical Society Professor Ghon showed some of the viscera of a boy, 13 years of age, who died not long ago. In December, 1906, he swallowed a quantity of a weak solution of caustic potash, whereupon violent vomiting followed. In course of time he showed symptoms of stenosis of the œsophagus which necessitated protracted use of bougies, and jejunostomy had ultimately to be performed on account of a stenosis of the pylorus. Death was due to intercurrent broncho-pneumonia. The necropsy revealed stenosing erosion of the pylorus, two external erosions of the transverse colon which also had caused secondary stenosis by contraction, stenosis of one ureter, and chronic inflammatory changes of the peritoneum originating from the stomach. On the lesser curvature there was a perforation in the midst of a tumour-like mass which on histological examination proved to be carcinoma. This case is interesting on account of the age of the patient, for he is one of the youngest persons of whom there is a record as suffering from carcinoma, if ovarian and uterine neoplasms are not taken into consideration. Another point of interest in the case is the connexion between chronic irritation and malignant growth.

A Small Outbreak of Enteric Fever.

During the last three weeks a number of cases of enteric fever have been brought to the notice of the sanitary authorities and this gave rise to some uneasiness, for the Vienna water-supply is so pure that no epidemics of this kind have occurred for about 25 years. It was soon possible, however, to trace the source of infection to contaminated milk and the outbreak was quickly stopped. Whilst every care is taken to insure the supply of pure fresh milk to the city a certain dealer in a village where enteric fever existed unfortunately added infected water to the milk. The milk-supply of Vienna is to a great extent centralised and the milk is subjected to pasteurisation in most of the dairies, but by some misadventure the heating process was interrupted on these occasions before the milk was sterilised, with the result that 35 cases of enteric fever appeared in a certain district and two cases have ended fatally.

Radio-active Baths in Bohemia.

The Government has formed a bathing establishment at Joachimsthal, a mining district in northern Bohemia (from which the thaler, and consequently the dollar, derived its name), where pitchblende containing radium is found, and this establishment will be supplied with radio-active water directly from the mines. Notwithstanding the receipt of many offers from Karlsbad, Marienbad, and private persons the Government declined to let the control of the water pass out of its hands. The establishment will be under the superintendence of a medical man and as the water has a very high index of radio-activity its effect will have to be watched and studied

carefully. Quite recently it was announced in the newspapers that three grammes (less than 50 grains) of radium had been obtained at a cost of £2000 from ten tons of pitchblende in that place. This is no doubt an exaggeration, for it may be said that this amount approaches the total quantity of radio-active substance found in Joachimsthal during the last few years. However that may be, nearly all physiological and physical laboratories in Austria, as well as some clinical stations, possess small quantities of the new element which have been placed at their disposal by the Government.

Legislation as to the Certification and Detention of Lunatics.

Several cases of grave mistakes and unlawful detention of persons in lunatic asylums which have happened within the last few years have led to the adoption by a Parliamentary subcommittee of a Bill modifying the present conditions of admission into these institutions. Thus before a person can be put under the control of a trustee on account of his mental condition a judge must make an order, after previously hearing the opinion of duly qualified medical men, some of whom may be selected by the person alleged to be insane. No asylum may receive a patient without the written order of a judge unless the patient seeks admission voluntarily. The detention of a person against his will may not last longer than one year and if prolongation is necessary a new examination of his mental condition by a medical committee is again required.

Jan. 20th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Sudden and Violent Deaths in Montreal in 1907.

ACCORDING to the official report of Coroner McMahon of Montreal there were in that city in 1907 785 deaths attributable to accidents, &c. This was just 25 more than in 1906. There were 83 persons killed by railways, of whom 23 were killed by street railways. There were 27 suicides and 50 people met death from drowning. Fire was responsible for 44 deaths, which number includes the deaths of 17 school children and one teacher which took place in a school. There were 12 homicides and 217 sudden deaths. 51 people died without medical treatment and one through an automobile accident. 18 died in gaols, four in the police stations, and one in the patrol wagon. Alcohol caused four sudden deaths and there were 13 from gas asphyxiation and 17 from scalding. During the year there was only one case of manslaughter.

Birth Statistics.

Montreal has a huge birth-rate which is not perhaps exceeded by any other city in the world. It is shown that the birth-rate for 1907 is in the neighbourhood of 44·20 per 1000 of the population. The average of births for a period of 19 years has been 37·92 per 1000. This was for all nationalities, but during this period the birth-rate amongst French Canadians was over 40. The birth-rate in Montreal is higher than in Toronto by 13·21 per 1000, and the excess in comparison with a number of other cities is as follows: Breslau, 5·61; Prague, 13·18; Munich, 5·5; Vienna, 6·5; Milan, 10·0; Rome, 12·3; St. Petersburg, 6·5; London, 8·7; Paris, 16 4; New York, 10·0; and Philadelphia, 13·0. It is satisfactory to record that the proportion of illegitimate children born in the province of Ontario is steadily decreasing. In the year 1900 one out of every 55 of the children born there was illegitimate. Gradually year by year the proportion has been diminishing until in 1905 only one out of every 74·2 was of that unfortunate class. In 1899 the total number of illegitimate births was 808; in 1900, 800; in 1901, 812; in 1902, 819; in 1903, 782; in 1904, 798; and in 1905, 699. The proportion of illegitimates to every 100 children born in these years has been as follows: 1·80, 1·73, 1·76, 1·72, 1·6, 1·58, and 1·34. The comparison with other countries is most favourable, for the latest quinquennial periods return the illegitimate births to every 100 children born as follows: Austria, 14·55; Belgium, 8·51; Norway, 7·35; England, 4·04; Sweden, 10·80; France, 8·26; Scotland, 6·33; Ireland, 2·65; German Empire, 9·21; Prussia, 7·84; and Italy, 6·34. The following statistics are given of the multiple births in Ontario. From 1899 to 1905, both years inclusive, there have been in each of the years in the Province of Ontario twins as follows: 1899, 296; 1900, 401; 1901, 469; 1902, 523; 1903, 492; 1904, 549; and 1905, 526. In the seven years 1899 to 1905 inclusive there have been 29 births in which triplets have occurred. The proportion of male to female births in 1905 shows an increase over the preceding year, the proportion being 100 female to 105 male.

Toronto's Vital Statistics in 1907.

The total number of births registered in Toronto in 1907 was 6715, two a day more than in 1906. The marriage service was performed 3635 times, almost ten times a day, while the messenger of death entered the city 4563 times, nearly 13 times a day. The following is Toronto's record for the past seven years: 1900 (births, marriages, and deaths): 4530, 1789, 3604; 1901: 4445, 2148, 3404; 1902 (not given); 1903: 5040, 2631, 3730; 1904: 5283, 2867, 3884; 1905: 5816, 3060, 3915; 1906: 5985, 3108, 3960; and 1907: 6715, 3635, 4563.

Small-pox Expensive in Ontario.

Owing to neglect on the part of municipalities throughout the province of Ontario to enforce the Vaccination Act and the small-pox regulations it is estimated by Dr. C. A. Hodgetts, secretary of the Ontario Board of Health, that it has cost the province $2,000,000 in the past ten years. During those years the disease has been present throughout the province in more or less of an epidemic form but of a mild character. At the present time there are several centres and just within a few days from 15 to 20 cases were located in one of Toronto's public schools. Ontario now is a largely unvaccinated province and the reflection is on the municipal authorities themselves. If they had enforced the law as they are empowered so to do there would not have been 1 per cent. of the cases that have been reported during the past decade, for 99 per cent. of the cases have been in unvaccinated persons.

Reorganising the Staff of Toronto General Hospital.

Work in connexion with the reorganising of the visiting staff of the Toronto General Hospital is proceeding apace and it is quite apparent from the appointments which have been made and those which are on the *tapis* that this hospital will hereafter be a pure University hospital. There are to be three services in medicine and those who have been appointed heads are: Dr. A. McPhedran, professor of medicine in the University of Toronto; Dr. W. P. Caven, associate professor; and Dr. Graham Chambers, associate in the same University. Mr. I. H. Cameron, M.B., LL.D., F.R.C.S. (honorary), professor of surgery in the University, will be chief of the surgical staff. The heads of the three active services will be Dr. George A. Bingham, Dr. A. Primrose, and Dr. H. A. Bruce, all clinicians of the University Medical Faculty. Dr. R. A. Reeve, dean of the Medical Faculty and Past President of the British Medical Association, is head in ophthalmology; Dr. George R. McDonagh, head of laryngology, otology, and rhinology; Dr. J. F. W. Ross, head of the gynæcological department; Dr. Kennedy McIlraith, head of obstetrics and pædiatrics; and Dr. Samuel Johnston, head of anæsthetics. The assistants to these and the outdoor appointments have yet to be made. The chiefs of medicine and surgery are to confine themselves to these specialties and not to do any general practice.

Jan. 12th.

INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Civil Sanitary Reorganisation.

AN important communication was issued on Dec. 4th last by the Government of India, Home Department, to all local governments and administrations upon the subject of sanitary reform in civil areas.[1] It indicates a distinct advance towards the reorganisation of the civil sanitary department on modern lines and will no doubt attract the attention of sanitarians of all kinds at home and abroad.

Snake-bite in Burma.

A Local Government circular issued in Burma states that in view of the large number of deaths occurring annually in Burma from snake-bite it has been decided to distribute as widely as possible through the province the lancets designed by Sir Lauder Brunton for the treatment of snake-bite with permanganate of potassium. The efficacy of this treatment if at once applied is now established. The distribution will be left to the Commissioner of Divisions through

[1] This is dealt with at p. 263 of our present issue.—ED. L.

whom all local officers should obtain their supplies according to requirements before Nov. 1st in each year. To Government servants lancets will be issued free of charge, but cost price will be charged to municipalities, private firms, and individuals. A reserve stock of permanganate of potassium crystals will be kept at all hospitals and dispensaries for distribution to those who have lancets when the supply of permanganate contained in each lancet is exhausted.

Rabies in Jackals.

Owing to the prevalence of rabies in Simla the health officer attached to the Simla municipal council has started a campaign against jackals, large numbers of which exist in the vicinity of India's summer capital. A special man has been engaged to exterminate these animals by poison and also by shooting them. Bites caused by rabid jackals are always of much greater severity and graver prognosis than dog-bites.

The Serum Therapy of Plague.

Khan Bahadur N. H. Choksy, M.B., special plague officer, Bombay, has just published a valuable pamphlet recording recent observations on the serum-therapy of plague in India. It has been contended by some people that the serum treatment of plague cases is ineffectual, if not altogether useless, and that the results are entirely disappointing. Dr. Choksy contends that, having regard to the unfavourable conditions that are almost unavoidable in the treatment of a disease like plague, the wonder is that serum treatment has given such comparatively good results. He supports this assertion by an elaborate discussion of over 1600 cases treated at Bombay, Poona, Indore, Calcutta, and Karachi. The average mortality in plague cases in Bombay is about 89 per cent.; in cases treated with serum the incidence of mortality varied from 33·3 among a small number of Europeans, to 40 per cent. among Parsees, 44·3 per cent. among Mahomedans, and 55 per cent. among Hindus. Dr. Choksy contends that "the serum treatment is the only method of saving a larger proportion of lives in a certain class of patients." At the same time it cannot favourably influence all types of plague; in hospital practice where more than half the cases are of the septicæmic type on admission, and consequently not amenable to any specific treatment, it must be of comparatively little value. The essence of successful serum treatment is that it should be commenced at an early stage of the disease. This is rarely possible with hospital patients, most of whom have been suffering several days before admission. But in the case of private patients who call in a medical man at once the results are undoubtedly favourable. Among 468 private patients the case mortality was only 39·9 per cent., while among 613 specially selected hospital patients it was 57 per cent. Again, among first-day patients the case mortality was 30·3, among second-day patients 52·6, and among third-day patients 63 per cent. These figures show, as Dr. Choksy contends, favourable results, and if patients could be taught to apply for treatment as soon as they were attacked the results would be still more satisfactory.

The Chinsura Cholera Cases.

Three tragic deaths which occurred recently from cholera have been the subject of a special investigation by Major Clarkson, I.M.S., sanitary commissioner, who traced the transmission of the cholera germ to the jharans (cloths used for cleaning dinner plates) of one of the servants of the house. Mr. Bernard, Commissioner, Mrs. Bernard (his wife), and a Miss White, a visitor, were the victims; several others who partook of food with them were also attacked but recovered. The jharans were infected by being washed in a portion of a river where a cholera corpse of a native had been lying, the disease being transmitted to the dinner plates by the infected jharans.

Jan. 4th.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Huethe, formerly surgeon general of the German Navy, at the age of 74 years, who had been living in retirement since 1894. He was for some time a professor in the Naval Military Academy at Kiel. His death took place at Capri.—Dr. Donner, formerly professor of physiology in the Tours Medical School.—Dr. H. P. Loomis, professor of therapeutics and materia medica in Cornell University.—Dr. Karl Schwing, extraordinary professor of gynæcology in the Bohemian University of Prague.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the first professional examination held on Jan. 7th, 8th, 9th, and 10th, the following gentlemen were approved in the subjects indicated:—

Chemistry and Physics.—Gilbert Bailey, Manchester University; Basil Fraser Beatson, Leys School, Cambridge; William Hackett Broughton, Manchester University; Frederick William Campbell, University College, Cardiff; Rowland Burnell Campion, Guy's Hospital; Nai Cheune, London Hospital; Henry Dyer Scott Close, St. Thomas's Hospital; Edward Percy Drabble, London Hospital; Charles Alexander Robertson Gatley, Guy's Hospital; John Llewellyn David Lewis, Guy's Hospital; Victor Alfred Luna, Guy's Hospital; Leonard Robert Pickett, Tonbridge School; Henry Charles Rigg, Charing Cross Hospital; William Andrew Thompson, Guy's Hospital; Claude de Boudry Thomson, Middlesex Hospital; Claude William Treherne, St. Thomas's Hospital; Arnold Viney, Oundle School; and Sydney Arthur Wilkinson.

Chemistry.—Ahmed Abdel-Al, Guy's Hospital; Frank Cunninghame Cowton, Alexander Rentoul Esler, and Maberly Squire Esler, St. Thomas's Hospital; Hassell Dyer Field, Battersea Polytechnic; Meredydd Foulkes, St. Thomas's Hospital; Francis Henry Guppy, St. Bartholomew's Hospital; Frank Mainwaring Hughes, Gerald Noel Martin, and David Scott, London Hospital; Ivan Lindley Waddell, St. Bartholomew's Hospital; and William Neville Pennant Williams, Liverpool University.

Physics.—Allan Stanley Coalbank, St. Bartholomew's Hospital; William Trevor Fiooks, University College, Cardiff; Owen Gwatkin, Manchester University; William Fidler Mason, Leeds University; Eugene Andrew Joseph Murphy, King's College; Edmund Uniacke Russell, King's College; Charles Pearse Crodacott Sargent, St. Bartholomew's Hospital; and Henry Stanley Young, Birkbeck College.

Biology.—Ramrao Belcrushma Agaskar and George Aspinall-Stivala, St. Bartholomew's Hospital; Gilbert Bailey, Manchester University; William Somerset Birch, King's College; Herbert Chorley, Liverpool University; Arthur George Bisset Fenwick, St. Thomas's Hospital; Geoffrey Garland, Leeds University; Charles Alexander Robertson Gatley, Guy's Hospital; William Edward Hallinan, Charing Cross Hospital; Leslie Price Harris, Guy's Hospital; John Rollo Hayman, Middlesex Hospital; George Basil Henley Jones, Guy's Hospital; Edmund Thomas Howard Lea, Westminster Hospital; David Lewis, London Hospital; Victor Alfred Luna, Guy's Hospital; Alexander Macrae, London Hospital; Reginald Victor Martin, St. Mary's Hospital; Arthur Geoffrey Morris, University College, Bristol; Eugene Andrew Joseph Murphy, King's College Hospital; Frank Andrew Miller Nelson, London Hospital; Jorabhai Bhaibabhai Patel, Bombay University; Montague Pern and George Brentnall Pritchard, Guy's Hospital; Walter Alexander Reynolds, St. Mary's Hospital; Henry Charles Rigg, Charing Cross Hospital; Charles Pearse Crodacott Sargent, St Bartholomew's Hospital; Jelal Moochool Shah, Bombay University and St. Bartholomew's Hospital; Cuthbert Shaw-Crisp, St. Mary's Hospital; William Andrew Thompson, Guy's Hospital; Chunilal Bhimbhai Vakil, St. Bartholomew's Hospital; William Cuthbert Whitworth, Guy's Hospital; William Neville Pennant Williams, Liverpool University; and William Wörger, University College, Bristol.

At the Preliminary Science Examination for the Licence in Dental Surgery held this month the following gentlemen were approved in the subjects indicated:—

Chemistry and Physics.—Robert Reginald Adams, Guy's Hospital Edwin Randolph Bailey and Henry Leonard Bailey, Polytechnic Institute; Stanley Maddox Gardner, Technical Institute, Wandsworth; Robert John Harley-Mason, Birkbeck College; Guy William Enstone Holloway, Polytechnic Institute; Sidney William Ingram, Guy's Hospital; William Howard Keay, Walsall Technical Institute; Sidney Saxton, University College, Bristol; Herbert Thornton, Guy's Hospital; and Thomas Reginald Trounce, Birkbeck and City of London Colleges.

Chemistry.—Ernest Walter Bacon, Alleyn's School; Arthur Raymond Goddard, University College, Nottingham; Cyril Arthur Pollard, Birkbeck College; James Stacey Robinson, Walsall Technical Institute; George Wesley Royle, Modern School, Bedford; and James Bennett Sharp, Charing Cross Hospital.

Physics.—Charles Repton Faulkner, Birmingham University; Thomas Leonard Fiddick, Guy's Hospital; Roy William List, Charing Cross Hospital; William Macqueen Potter, Birkbeck College; and Frank Percival Sturdee, Northern Polytechnic Institute and Birkbeck College.

At the quarterly examination in Practical Pharmacy held on Jan. 16th the following gentlemen were approved:—

Burgess Barnett, St. Bartholomew's Hospital; Charles Thornton Vere Benson, B.A. Cantab, Cambridge University and St. Thomas's Hospital; John William Bowen, private study; Frederick William Campbell, University College, Cardiff; Arthur Henry Howard Catt, Charing Cross Hospital; Nai Cheune, London Hospital; Thomas Bonnor Davies, St. Bartholomew's Hospital; Maurice Dwyer, Leeds University; Harold Delf Gillies, Cambridge University and St. Bartholomew's Hospital; Arthur Oliver Gray, King's College Hospital; Claud Anthony Holburn, Sheffield University; George Barrowclough Horrocks, Victoria University, Manchester; Gilbert Percy Humphry, St. George's Hospital; Colin Mackenzie, B.A. Cantab., Cambridge University and Middlesex Hospital; Dalton Mallam, London Hospital; Samuel Marle, University College, Bristol; Guy Harvey Mead, St. Thomas's Hospital; Bertram Charles Noble O'Reilly, London Hospital; George Hugh Piercy, University College, Bristol; Arthur Hardwicke Platt,

Westminster Hospital; Kenneth Pretty, Cambridge University and St. Bartholomew's Hospital; John Startin, St. Thomas's Hospital; Percy Stanley Tomlinson, University College, Bristol; William Wijegoonewardena, Ceylon Medical College and King's College Hospital; Charles Eustace Williams, Charing Cross Hospital; and Stanley Wood, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital.

UNIVERSITY OF CAMBRIDGE.—The following degrees were conferred recently:—

M.C.—E. W. Sheaf, Downing.
M.B., B.C.—F. O. Arnold, Trinity.
B.C.—J. H. Ryffel, Peterhouse; B. P. Campbell, Clare; E. Slack, Pembroke; D. W. A. Bull, Gonville and Caius; B. A. I. Peters, Jesus; H. N. Coleman, Clare; N. M. Fergusson, Magdalene; and W. G. Parkinson, Emmanuel.

UNIVERSITY OF BIRMINGHAM.—The following candidates having passed the necessary examinations have obtained the Diploma in Public Health of this University:—

Tom William Beazeley and William Henderson Davison.

LITERARY INTELLIGENCE.—The Walter Scott Publishing Co. will shortly issue a work by Dr. R. R. Rentoul entitled, "Enthetic Diseases (or the Young Man's Peril)."

LONGEVITY.—Mrs. Williams of Sophia-street, Cardiff, has recently reached the age of 100 years.

AFTER-CARE ASSOCIATION.—The next annual meeting of the After-Care Association will be held at 48, Wimpole-street, London, W., by the kind permission of Dr. G. F. and Mrs. Blandford, on Wednesday, Jan. 29th, at 3 P.M. The chair will be taken by Mr. Anthony Hope Hawkins and after the usual business a paper will be read by Dr. G. H. Savage upon the subject of Convalescence from Mental Disorders.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the ordinary Council on Jan. 16th the diploma of M.R.C.S. was conferred upon John Lawrence Graham-Jones, B.A. Cantab., Cambridge University and St. Thomas's Hospital, and Charles Harold Smith, M.B. Liverpool, Liverpool University, who have passed the necessary examinations and have now complied with the by-laws. Licences to practise dentistry were conferred at the same meeting upon Samuel Stephenson Parkinson, Charing Cross and Royal Dental Hospitals, and Wilton Thew, Charing Cross and Royal Dental Hospitals, who have now complied with the by-laws of the College.

INCOME TAX REDUCTION LEAGUE.—A public meeting of the Income Tax Reduction League will be held in the Great Hall, Cannon-street Hotel, at 4 o'clock on Monday, Jan. 27th, when the Right Hon. Viscount St. Aldwyn, the Earl of Kinnoull, the Hon. Herbert C. Gibbs, Sir Alexander H. Brown, Bart., Sir Alexander Henderson, Bart., Professor H. S. Foxwell, and other gentlemen will take part. The Right Hon. Lord Avebury will preside. The aims of the League are: (1) to organise income tax payers for purposes of self-defence; (2) to obtain in times of peace a substantial reduction of the income tax, which ought not to stand at a war rate; and (3) the restriction of income tax to profits actually received by shareholders, or by individual traders, and to exempt depreciation funds from the operation of the tax.

THE CENTRAL POOR-LAW CONFERENCE.—The thirty-sixth annual central conference of the Poor-law authorities of England and Wales will be held in the council chamber of the Guildhall on Tuesday, Feb. 18th, and following day, the Right Hon. Sir Edward Fry, G.C.B., presiding. The Lord Mayor will attend in state and open the proceedings. Sir Edward Fry will then deliver his presidential address. The first day is to be devoted to a discussion on the Relation of Legal Relief and Private Charity, which will be opened by Mr. W. A. Bailward, late chairman of the Bethnal Green board of guardians. A debate is expected on the second day upon the Provision of Work for the Unemployed, opened by Mr. John Kentish Wright (Nottingham) and Mr. Robert Waite (King's Norton), with the Rev. P. S. G. Propert, chairman of the Fulham board of guardians, as selected speaker. The subject of the Treatment of Tuberculosis under the Poor-law will be introduced in a comprehensive paper by Dr. Nathan Raw, physician to the Mill-road Infirmary, Liverpool. Boards of guardians in all parts of England and Wales will, as usual, send delegates, and in addition the 12 Poor-law districts will be officially represented by their members on the central committee, of which Dr. J. Milson Rhodes is chairman, Sir William Chance, Bart., honorary secretary, and Mr. W. G. Lewis (barrister-at-law), secretary.

UNIVERSITY COLLEGE, BRISTOL.—The annual dinner of the University College Colston Society was held on Jan. 14th under the presidency of Mr. G. A. Wills. The chairman announced that his father, Mr. H. Overton Wills, had decided to make a gift of £100,000 towards the fund for the foundation of a university for Bristol and the West of England, provided that a charter be granted within two years. It was stated that £197,000 of the £250,000 required before the charter can be applied for had been subscribed. The guest of the evening was Sir William J. Collins, M.P., Vice-Chancellor of the University of London, who in an interesting speech alluded to the ideals of higher education and added that he considered Bristol had all the elements for the constitution of a vigorous and healthy university.

PROPOSED CONSUMPTION HOSPITAL FOR HEREFORDSHIRE.—At a meeting of the Herefordshire county council on Jan. 11th Sir Richard Harrington moved:—

That it be referred to the general purposes committee to inquire and report whether it is practicable to establish a county hospital for incipient cases of tuberculosis on the condition of any, and what, payment by the respective boards of guardians throughout the county for pauper patients sent there and to consider the advisability of admitting paying patients.

Sir Richard Harrington said that he thought that a scheme might be adopted whereby the county would not be put to any expense. In other words, the hospital might be made self-supporting. Last year, at a similar hospital in Westmorland, a profit of £359 was made. Mr. George Creswell, who seconded the motion, said that in Herefordshire alone there were 500 persons suffering from consumption. The motion was agreed to.

UNIVERSITY OF LONDON: UNIVERSITY COLLEGE.—A course of eight lectures on the Chemical Constitution of the Proteins will be delivered by Mr. R. H. Aders Plimmer, D.Sc., in the Physiological Laboratory of the College on Wednesdays at 5 P.M., having been commenced on Jan. 22nd. The lectures will deal with the history of the discovery and of the determination of the constitution of the amino acids; the hydrolysis of the proteins and the quantitative determination of the products of hydrolysis; the synthesis of the proteins and the polypeptides; and the action of enzymes on the polypeptides. A course of eight lectures on the Chemistry of the Fats and Carbohydrates will be delivered by Mr. S. B. Schryver, D.Sc., Ph.D., in the Physiological Theatre on Fridays at 5 P.M., commencing to-day (Friday, Jan. 24th). The subject will be considered under the following headings:—The general chemistry of the fats and carbohydrates and the methods of differentiation; the enzymes which act on fats and carbohydrates; the part played by fats and carbohydrates in the general economy of nutrition; and their places of origin and synthesis in animal and vegetable organisms. Both sets of lectures are open to all students of the University of London and also to all qualified medical men and other persons who are specially admitted.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, 41 and 43, Maddox-street, London, W.

The Chemical Basis of Pharmacology. An Introduction to Pharmacodynamics based on the Study of the Carbon Compounds. By Francis Francis, D.Sc., Ph.D., Professor of Chemistry, University College, Bristol, and J. M. Fortescue-Brickdale, M.A., M.D. Oxon., Physician Bristol Royal Hospital for Sick Children, Medical Registrar Bristol Royal Infirmary, Demonstrator of Physiology, University College, Bristol. Price 14*s.* net.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent Garden, London, W.C.

Aids to Surgery. By Joseph Cunning, M.B., B.S., F.R.C.S. Eng., Surgeon to the Victoria Hospital for Children; Assistant Surgeon to the Royal Free Hospital. Second edition. Price, cloth, 4*s.* net; paper, 3*s.* 6*d.* net.

The Pocket Anatomy. Sixth edition, revised and edited by C. H. Fagge, M.B., M.S. Lond., F.R.C.S. Thirtieth thousand. Price 3*s.* 6*d.* net.

The Spectroscope, its Uses in General Analytical Chemistry. An Intermediate Text-book for Practical Chemists. By T. Thorne Baker, F.C.S., F.R.P.S., Author of "Spektralphotographie, und deren Anwendung," "Orthochromatic Photography," &c. Price 5*s.* net.

DEUTICKE, FRANZ, Leipzig und Wien.

Atlas der Venerischen Affektionen der Portio Vaginalis Uteri und der Vagina. Von Dr. Moriz Oppenheim. Privatdozent für Dermatologie und Syphilidologie an der K. K. Universität Wien. Price M.14.

DOIN, OCTAVE, 8, Place de l'Odéon, Paris.

Études sur la Physio-Pathologie du Corps Thyroïde et de l'Hypophyse. Par les Docteurs Léopold-Lévi et Henri de Rothschild. Préface de M. Ch. Achard, Professeur Agrégé à la Faculté de Médecine, Médecin de l'Hôpital Necker. Price Fr.8.

DYBWAD, JACOB (In Kommission bei), Christiania. (A. W. Broggers' Buchdruckerei.)

Pathologisch-anatomische Untersuchungen über Akute Poliomyelitis und verwandte Krankheiten von den Epidemien in Norwegen, 1903–1906. Von Francis Harbitz, Professor der Pathol. Anatomie und allgemeinen Pathologie an der Universität zu Kristiania und Olaf Scheel, I. Assistent am pathologisch-anatomischen Institute zu Kristiania. (Udgivet for Fridtjof Nansens Fond.) Price not stated.

FISCHER, GUSTAV, Jena.

Die zytologische Untersuchungsmethode, ihre Entwicklung und ihre klinische Verwertung an den Ergüssen seröser Höhlen. Von Dr. Hermann Königer, Oberarzt an der medizinischen Klinik. Price M.3.

Handbuch der Orthopädischen Technik. Für Ærzte und Bandagisten. Bearbeitet von San.-Rat Dr. A. Schanz, Spezialarzt für Orthopädie in Dresden. Price, paper, M.18.; bound, M.20.

FROWDE, HENRY, and HODDER AND STOUGHTON, 20, Warwick-square, London, E.C.

Oxford Medical Publications. Fevers in the Tropics; Their Clinical and Microscopical Differentiation, including the Milroy Lectures on Kala-Azar. By Leonard Rogers, M.D., F.R.C.P., F.R.C.S., B.S., I.M.S., Professor of Pathology, Medical College, Calcutta; Fellow of the Calcutta University; Honorary Member of the United States Society of Tropical Diseases and of the Philippines Medical Society. Price 30s. net.

Oxford Medical Publications. Life Insurance and General Practice. By E. M. Brockbank, M.D. Vict., F.R.C.P., Honorary Assistant Physician, Royal Infirmary, Manchester; Lecturer in Materia Medica and Therapeutics, Victoria University of Manchester. Price 7s. 6d. net.

GREEN, WILLIAM, AND SONS, Edinburgh and London.

Essentials of Physiology for Veterinary Students. By D. Noël Paton, M.D., B.Sc., F.R.C.P. Edin., Professor of Physiology, University of Glasgow. Second edition, revised and enlarged. Price 12s. net.

HIRSCHWALD, AUGUST, Unter den Linden 68, Berlin, N.W.

Atlas der Pathologisch-anatomischen Sektionstechnik. Von Prof. Dr. M. Westenhoeffer. Price M.2.

J. B. LIPPINCOTT COMPANY, Philadelphia and London.

International Clinics. Edited by W. T. Longcope, M.D., Philadelphia, U.S.A., with collaboration. Volume IV. Seventeenth Series, 1907. Price not stated.

JOHN BALE, SONS, AND DANIELSSON, LIMITED, 83–91, Great Titchfield street, Oxford-street, London, W.

The Pyonex: its Theory and Practice. By W. B. Rule, M.R.C.S., L.R.C.P. Price 12s. 6d. net.

KABITZSCH, CURT. (A. STUBER), Würzburg.

Die Tierischen Parasiten des Menschen. Ein Handbuch für Studierende und Ærzte. Von Dr. Max Braun, O. Ö. Professor der Zoologie und Vergl. Anatomie, Direktor des Zoologischen Museums der Universität Königsberg i.Pr. Vierte, vermehrte und verbesserte Auflage. Mit einem klinisch-therapeutischen Anhang bearbeitet von Prof. Dr. Otto Seifert in Würzburg. Price, paper, M 15; bound M.17.

KEYSTONE PUBLISHING CO., THE, 809-811-813, North 19th-street, Philadelphia, U.S.A.

Tests and Studies of the Ocular Muscles. By Ernest E. Maddox, M.D., F.R.C.S. Edin., Ophthalmic Surgeon to Royal Victoria Hospital, Bournemouth; formerly Syme Surgical Fellow, Edinburgh University. Second edition, specially revised and enlarged by the Author. Price not stated.

KIMPTON, HENRY, 13, Furnival-street, Holborn, London, E.C. (STENHOUSE, ALEXANDER, 40 and 42, University Avenue, Glasgow.)

A Practical Treatise on Fractures and Dislocations. By Lewis A. Stimson, B.A., M.D., LL.D. (Yale), Professor of Surgery in Cornell University Medical College, New York; Surgeon to the New York and Hudson-street Hospitals. Fifth edition, revised and enlarged. Price 25s. net.

The Principles and Practice of Modern Surgery. By Roswell Park, A.M., M.D., LL.D. (Yale), Professor of the Principles and Practice of Surgery and of Clinical Surgery in the Medical Department of the University of Buffalo, New York. Volume I., General Surgery. Volume II., Regional Surgery. Price of the work complete in two volumes, 36s. net.

LEHMANN, J. F., München.

Die Entwicklungsgeschichte des Talentes und Genies. Von Dr. Albert Reibmayr. Erster Band: Die Züchtung des individuellen Talentes und Genies in Familien und Kasten. Price M.10.

Drei Jahre Gallensteinchirurgie. Bericht über 312 Laparotomein am Gallensystem aus den Jahren 1904–1906. Von Prof. Dr. Hans Kehr, Geh. Sanitätsrat in Halberstadt, Dr. Lieboid, Assistenzarzt der Klinik und Oberarzt Dr. Neuling, kommandiert an die Klinik. Price M.14.

Schema des Rumpfes. Von Privatdozent Dr. W. Hildebrandt, Freiburg i.B. Taschenausgabe. Price M.1.20.

MACMILLAN COMPANY, THE, New York. (MACMILLAN AND CO., LIMITED, London.)

Lessons in Hygienic Physiology. By Walter Moore Coleman, A.B., Fellow of the Physical Society of London. Price 3s.

MARLBOROUGH, E., AND CO., 51, Old Bailey, London, E.C.

Egyptian Self-Taught (Arabic). By Captain C. A. Thimm. Third edition, revised and enlarged by Major R. A. Marriott, D.S.O. Price, wrapper, 2s.; cloth, 2s. 6d.

REBER, ALBERTO, Libreria della R. Casa, Palermo.

A. Trambusti, Professore Ordinario di Patologia Generale nella R. Università di Palermo. La Febbre Mediterranea (Setticemia del Bruce). Conferenza tenuta nell' Aula degli Istituti Clinici di Perfezionamento a Milano il 30 Maggio, 1907. Price not stated.

ROUSSET, JULES, 1, Rue Casimir-Delavigne et 12, Rue Monsieur-le-Prince, Paris.

Traité Clinique des Maladies de l'Estomac. Par le Dr. Lucien Pron, (d'Alger). Price Fr.12.

RUEFF, J., 6 et 8, Rue du Louvre, Paris.

Alimentation et Hygiène des Enfants. Par le Dr. Jules Comby, Médecin de l'Hôpital des Enfants-Malades. Troisième édition. Price Fr.5.

SOCIÉTÉ DU MERCURE DE FRANCE, 26, Rue de Condé, Paris.

L'Art chez les Fous. Par Marcel Réja. Price Fr.3.50.

STEINHEIL, G., 2, Rue Casimir-Delavigne, Paris.

Considérations Historiques sur la Blennorragie. Par le Docteur Ernest Roucayrol, Médaille de Bronze de l'Assistance Publique, Membre de la Société Française d'Histoire de la Médecine. Price not stated.

URBAN AND SCHWARZENBERG, Berlin und Wien.

Die Praxis der Hautkrankheiten. Unna's Lehren für Studierende und Ærzte. Zusammengefasst und dargestellt von Dr. Iwan Bloch, Berlin. Mit einem Vorwort von Dr. P. G. Unna in Hamburg Price M.18.

Prof. Dr. Wilhelm Czermak. Die Augenärztlichen Operationen. Zweite vermehrte Auflage. Herausgegeben von Dr. Anton Elschnig, K.K.O.Ö. Universitätsprofessor und Vorstand der Deutschen Universitäts-Augenklinik in Prag. I. Band, 2 Hälfte Price M.10.

VIGOT FRÈRES, 23, Place de l'Ecole-de-Médecine, Paris.

Le Criminel aux Points de Vue Anthropologique, Psychologique et Social. Par le Dr. Émile Laurent. Préface de M. le Professeur Lacassagne. Price Fr.3 50.

Traitement de la Tuberculose par la Paratoxine. Basé sur l'Action antitoxique du Foie. Par E. Gérard, Professeur de Pharmacie et de Pharmacologie à l'Université de Lille, et G. Lemoine, Professeur de Clinique Médicale à l'Université de Lille. Price Fr.1.50.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ANDERSON, C. M., M.D. Edin., has been appointed Clinical Assistant to the Samaritan Free Hospital for Women.

BARBER, R. A., M.D., M.S.R.U.I., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Dronfield District of the county of Derby.

BURY, REGINALD FREDERICK, M.R.C.S., L.R.C.P. Lond., has been appointed Honorary Surgeon to the Warneford Hospital, Leamington Spa.

CULROSS, JAMES, M.B., C.M. Glasg., has been appointed to the Honorary Medical Staff of the Newton Abbot Hospital.

GLOVER, J. A., M.D. Cantab., D.P.H., has been appointed Deputy Medical Officer of Health to the Islington Borough Council.

GRIMBLY, RICHARD H., M.R.C.S., L.S.A., has been appointed to the Honorary Medical Staff of the Newton Abbot Hospital.

HAYDON, EDGAR, M.B., C.M. Glasg., has been appointed to the Honorary Medical Staff of the Newton Abbot Hospital.

HULBERT, J. G., Major, I.M.S., M.B., B.C. Cantab., has been appointed Clinical Assistant to the Samaritan Free Hospital for Women.

HUNT, ERNEST, L.R.C.P., M.R.C.S., has been appointed to the Honorary Medical Staff of the Newton Abbot Hospital.

MACMILLAN, EVAN, M.B., M.S. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Strathmiglo District of the county of Fife.

MANNERS, W. F., M.R.C.S. Eng., has been appointed Clinical Assistant to the Samaritan Free Hospital for Women.

MILLAR, N., L.D.S. Eng., has been appointed Honorary Dental Surgeon to the Newton Abbot Hospital.

NISBET, A. THOMSON, M.D., C.M. Glasg., has been appointed to the Honorary Medical Staff of the Newton Abbot Hospital.

PURNELL, R., M.D. St. And., M.R.C.S., L.S.A., J.P., has been appointed a Member of the Visiting Committee for Shepton Mallet and Bristol Prisons.

SCOTT, WALTER H., L.R.C.P. Lond., M.R.C.S., has been appointed to the Honorary Medical Staff of the Newton Abbot Hospital.

SCOTT, W. GIFFORD, M.B., C.M. Edin., L.R.C.S. Edin., has been appointed to the Honorary Medical Staff of the Newton Abbot Hospital.

SCRASE, J. J. S., L.R.C.P., M.R.C.S., has been appointed to the Honorary Medical Staff of the Newton Abbot Hospital.

SHIRVELL, EDGAR A., M.R.C.S., L.R.C.P. Lond., has been appointed Resident Medical Officer at the Royal Albert Hospital, Devonport.

SMITH, G. F. DARWALL, B.M., B.Ch. Oxon., F.R.C.S. Eng., has been appointed Surgeon to Out-patients at the Samaritan Free Hospital for Women.

STUART, FREDERICK, M.B., B.S. Durh., has been appointed Clinical Assistant to the Samaritan Free Hospital for Women.

SUGDEN, W. A., L.S.A., has been appointed Clinical Assistant to the Samaritan Free Hospital for Women.

WATKINS, JOHN GRANDISSON, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the North Curry District by the Taunton Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—House Surgeon for six months. Salary at rate of £20 per annum, with board and lodging.

BIRMINGHAM, CITY OF.—Medical Officer (female) for Notification of Births Act. Salary £200 per annum.

BLACKBURN COUNTY BOROUGH, EDUCATION COMMITTEE.—Assistant Medical Officer of Health. Salary £150 per annum.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—Surgeon.

BOOTLE, BOROUGH OF, HOSPITAL FOR INFECTIOUS DISEASES.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, washing, and apartments.

BRIGHTON, SUSSEX COUNTY HOSPITAL.—Second House Surgeon, unmarried. Salary £60 per annum, with board and residence.

BRIGHTON THROAT AND EAR HOSPITAL, Church-street, Queen's-road.—Non-resident House Surgeon for six months, renewable. Salary at rate of £75 per annum.

BRISTOL, UNIVERSITY COLLEGE.—Demonstrator of Physiology.

CAMBRIDGESHIRE, &c., ASYLUM, Fulbourn.—Second Assistant Medical Officer, unmarried. Salary £120, rising to £150 per annum, with board, lodging, and attendance.

CANCER HOSPITAL, Fulham-road, London, S.W.—House Surgeon for six months. Salary £70.

CARMARTHEN, JOINT COUNTIES LUNATIC ASYLUM.—Assistant Medical Officer. Salary £200 per annum, with board, lodging, washing, and attendance.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Junior House Surgeon. Salary £60 per annum, with board, apartments, and laundry.

CITY OF LONDON LYING-IN HOSPITAL, City-road, E.C.—Two Physicians.

CROYDON, COUNTY BOROUGH OF.—Female Assistant to the Medical Officer of Health. Salary £250 per annum.

DEVONPORT, ROYAL ALBERT HOSPITAL.—Assistant Resident Medical Officer, unmarried, for six months. Salary at rate of £50 a year, with board, lodging, and laundry.

GREAT YARMOUTH COUNTY BOROUGH.—Assistant Medical Officer of Health. Salary £200 per annum.

HAMPSTEAD GENERAL HOSPITAL, amalgamated with the NORTH-WEST LONDON HOSPITAL.—Two Physicians and two Surgeons.

HULL, ROYAL INFIRMARY.—House Physician-in-Charge, unmarried. Salary £105 per annum, with board and apartments.

IRELAND, LURGAN UNION WORKHOUSE AND FEVER HOSPITAL.—Resident Medical Officer (female). Salary £80 per annum, with apartments, laundry, and rations.

KING EDWARD VII. SANATORIUM, Midhurst, Sussex.—Junior Assistant Medical Officer, unmarried. Salary £100 per annum, with board, lodging, and attendance.

LEEDS TUBERCULOSIS ASSOCIATION.—Resident Medical Officer of Health for the Sanatorium at Gateforth, near Selby, for six months. Salary at rate of £100 per annum, with board, lodging, and washing.

LIVERPOOL HEBREW TONTINE SOCIETY.—Surgeon.

MONTGOMERY COUNTY COUNCIL.—Medical Officer of Health. Salary £75 per annum.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead and Northwood, Middlesex.—Junior Resident Medical Officer. Salary £50 per annum, with board, lodging, &c

NORTHAMPTON COUNTY ASYLUM, Berry Wood.—Junior Assistant Medical Officer, unmarried. Salary £150, increasing to £200, with board, lodging, and washing.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—Assistant Physician.

SALFORD, LADYWELL SANATORIUM.—Assistant Medical Officer. Salary £150 per annum, with apartments and board.

SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Honorary Medical and Surgical Registrar.

SEAMEN'S HOSPITAL SOCIETY.—Surgeon at Branch Hospital.

ST. PANCRAS AND NORTHERN DISPENSARY, 125, Euston-road.—Honorary Physician.

STROUD GENERAL HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and washing.

WESTERN GENERAL DISPENSARY, Marylebone-road, N.W.—Honorary Surgeon.

Births, Marriages, and Deaths.

BIRTHS.

LAST.—On Jan. 12th, at Littlehampton, the wife of Cecil E. Last, M.R.C.S., L.R.C.P. Lond., of a daughter.

RIX.—On Jan. 18th, at 4, Dennington Park-road, West Hampstead, N.W., the wife of Francis W. Rix, M.B., of a son.

DEATHS.

BEST.—On Jan. 11th, at Cheltenham, Frederic Arthur Best, M.R.C.S., L.S.A. Lond., aged 69 years.

GALE.—On Sunday, Jan. 19th, John Dakeyne Gale, of 26, St. George's-road, S.W., Senior Partner in the firm of Gale and Company, 15, Bouverie-street, Fleet-street, E.C.

GREAVES.—On Jan. 20th, at Eastgate-street, Stafford, Charles Henry Greaves, M.D.

KNAGGS.—On Jan. 16th, H. Guard Knaggs, M.D., F.L.S., Lennard-road, Folkestone, in his 75th year.

PIRIE.—At 20, Bonaccord-square, Aberdeen, on Jan. 16th, suddenly, Margaret, beloved wife of W. R. Pirie, M.B.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE WINTER EXHIBITION AT THE ROYAL ACADEMY.

To the Editor of THE LANCET.

SIR,—My somewhat belated letter is due to my custom of reserving your classical and art notes—which, I may add, I enjoy hugely and esteem highly—for digestion on the Sunday following publication.

The cause of the letter is to be found in your remarks in THE LANCET of Jan. 11th on the Cowley picture. Anything reflecting even indirectly on Abraham Cowley I feel as if cast on a personal friend, and I would like to be permitted to point out that many of your readers not acquainted with his studies and his life might derive a derogatory opinion of him from your sentence: "Cowley began to study medicine about 1656, and on Dec. 2nd, 1657, he was created M.D. at Oxford 'by order of the Government'—a piece of servility impossible in these days." As hurried journalism such a sentence is permissible and striking, for it is the bare truth; as compared to your classical notes it is sadly wanting in perspective.

As this note is intended for your edification (and perhaps later, if you see fit to correct the impression, for your readers also) may I recapitulate the essential features in Cowley's life which rendered "the order of the Government" not only possible but necessary?

"Entered at Trinity, Cambridge, 1636, B.A. 1639, minor Fellow 1640, major Fellow 1642, and M.A. in due course," he was ousted from that stronghold of Puritanism, or at least of Parliamentarism, on account of his strong Royalist opinions and sought refuge from his beloved though Saeva Mater at St. John's College, Oxford, the Royalist centre. We have little or no direct information on his individual studies, but it at least is presumable he began at that time the study of medicine, such as it was, and particularly from his predilection to botany, which then bulked largely in medical studies. Following the train of Queen Henrietta he was absent from England some 12 years, and only returned to be cast into a Cromwellian prison as a spy. Whether he did return with that intention or impelled by the growing fatalism that Cromwellianism was become perpetuated, it is certain that he was a suspected person, "for some time under Trouble, but at length complying (even too much as far as I can learn) with some in power, he got an order to be created M.D. (as he afterwards actually was) at Oxford."

Of course he got an "order" or otherwise he would not have been permitted to study and qualify at Oxford, released from prison as he was on the bail of Dr. Ch. Scarbrugh for £1000; a bail not abrogated in spite of his compliance.

So far as one can learn he made no use of his medical knowledge in practice, but "in the commencement of the Royal Society, of which an account has been given by Dr. Birch, he appears busy among the experimental philosophers under the title of Dr. Cowley."

My point is that Cowley returned to Oxford to complete studies already commenced in 1642. He was very much blamed for compliance ("even complying too much") and so obtaining his release from prison. The "order" saw to it that Oxford should not reject his attendance on that account and possibly also acted as a deterrent to any Royalists there with whom Cowley might seek to enter into treasonable conversation if there still remained any disposition on his part to act as a secret Royalist agent. Notwithstanding the "order" Cowley remained a "suspect" during the remaining tenure of Puritan Governments, and some even considered his medical studies a mere blind for treasonable practice.

If the "order of Government" had been an act of favouritism towards Cowley, surely he would not have been placed at the same time under a bail of £1000—a very large sum then. That would be a kiss and a blow with a vengeance!

He was known to have been the channel through which all the plotting correspondence of the exiled court for 12 years had been conducted, and having secured his release from prison by compliance with the Puritan Government I think my view of the "order" becomes a very reasonable one. *He was a "suspect" of both parties* explains it in short.

I must hunt up the terms of the "order" some day; it would be an interesting point to university men.

I am, Sir, yours faithfully,

Jan. 19th, 1908. N. CAMPBELL.

SHIP SURGEONS AND VACCINATION FEES.

To the Editor of THE LANCET.

SIR,—Not long ago Brazil, Uruguay, and Argentina passed laws insisting upon the vaccination of passengers before landing, and the shipping companies made their ship surgeons do the extra work without any extra pay, which in one case at least led to a difference of opinion.

Can anyone give information how matters stand at the present time, and whether the question of extra pay for the extra work has been settled in an equitable manner by any of the shipping companies running to South America? I am, Sir, yours faithfully,

Jan. 18th, 1908. BITTEN.

DEATH OF A CENTENARIAN IN AUSTRALIA.

IT is stated in the *Australasian* that John Browne, an inmate of the Liverpool Benevolent Asylum, New South Wales, died last month at the reputed age of 119 years. About three years ago he lost his hearing and 18 months later he had a paralytic stroke. He formerly belonged to the British Navy and landed in New South Wales at the age of 32. 20 years ago he entered the asylum, being then 99 years old. His age was fully authenticated by the Asylum authorities.

ARTIFICIAL NOSES.

To the Editor of THE LANCET.

SIR,—Can any of your correspondents tell me of any firm making artificial noses and recommend the work from personal knowledge?

I am, Sir, yours faithfully,

Jan. 22nd, 1908. M.D.

A COUNTESS'S CURE FOR SMALL-POX.

To the Editor of THE LANCET.

SIR,—In the interesting note under the above heading which appears in your issue of Jan. 18th a passage in the Countess's recipe is given as follows, "as much refined scarved (?) through tiffeny." There is evidently a word omitted after "refined" and the word "scarved" should undoubtedly be "searched" or "scarced," meaning put through a sieve. The word "search" is still a common Scots word for a sieve, or was so at any rate in the early years of the last century. Moreover, the expression "fine scarced sugar" will be found constantly in the seventeenth century cookery books.

I am, Sir, yours faithfully,

Jan. 21st, 1908. ETONENSIS.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Jan. 23rd, 1908.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Jan. 17	30·03	S.W.	...	66	53	50	49	51	Cloudy
,, 18	30·29	S.W.	...	53	48	43	42	43	Fine
,, 19	30·34	E.	...	43	41	34	35	36	Foggy
,, 20	30·43	N.E.	...	58	44	36	38	39	Cloudy
,, 21	30·57	S.E.	...	43	38	33	35	36	Foggy
,, 22	30·43	S.	...	43	42	33	35	37	Overcast
,, 23	30·50	S.	...	40	40	36	38	38	Foggy

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (27th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (3 P.M.), St. Mark's (2.30 P.M.).

TUESDAY (28th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (2 P.M., Ophthalmic, 2.15 P.M.), Tottenham (2.30 P.M.).

WEDNESDAY (29th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.).

THURSDAY (30th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (2.30 P.M.). Tottenham (Gynæcological, 2.30 P.M.)

FRIDAY (31st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.).

SATURDAY (1st).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 20, Hanover-square, W.

MONDAY.—(*Odontological Section*). 7 P.M., Council Meeting. 8 P.M., The Curator: Recent Additions to the Museum. Mr. W. W. James: Some Notes on a Case of Extensive Necrosis of the Mandible. (The patient will be in attendance before the meeting.) Mr. J. F. Colyer: The Treatment of Children from a Dental Aspect (illustrated by the epidiascope).

TUESDAY.—(*Medical Section*). 5 P.M., Dr. C. Thomson: Demonstration of the Use of the Kinematograph in Illustration of Disease. Dr. A. F. Hertz: Pathology and Treatment of Constipation (illustrated by lantern slides). (*Therapeutical and Pharmacological Section*). (Apothecaries' Hall, Blackfriars, E.C.) 4.30 P.M., Prof. W. E. Dixon: Arterio-sclerosis and its Causation. Prof. A. R. Cushing: Nutmeg Poisoning.

THURSDAY.—(*Neurological Section*). 8 P.M., Cases. 8.30 P.M., Discussion on "Ties."

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8.30 P.M., Mr. C. B. Lockwood: The Use of Chemicals in Aseptic Surgery. Dr. S. West: The Nervous Complications in Acute Pneumonia.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THURSDAY.—8 P.M., Card Cases. 8.30 P.M., Mr. S. Snell: (1) Carcinoma of Orbit; (2) Colobroma of Iris in each Eye occurring in Five Generations. Mr. S. Mayou: Microphthalmia resembling Glioma, with Lenticonus and Hypertrophy of the Ciliary Body. Mr. L. Paton: Optic Neuritis in Cerebral Tumours. Dr. A. J. G. Barker: A Case of Suppurative Tenonitis.

BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY, 20, Hanover-square, W.

WEDNESDAY.—5.30 P.M., Adjourned Discussion on Dr. Edgecombe's paper on Blood Pressure in Spa Practice (introduced by Dr. F. FOX) Mr. T. Hawksley: Exhibition of Blood Pressure Instruments.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. J. Galloway: Clinique (Skin). 5.15 P.M., Lecture:—Mr. J. Sherren: The Differential Diagnosis between Injuries of the Spinal Cord and those of Peripheral Nerves.

TUESDAY.—4 P.M., Dr. J. E. Squire: Clinique (Medical). 5.15 P.M., Lecture:—Dr. D. Sommerville: Mucous Colitis.

WEDNESDAY.—4 P.M., Mr. P. J. Freyer: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. W. Langdon Brown: Some Intestinal Intoxications.

THURSDAY.—4 P.M., Mr. Hutchinson: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. L. Williams: The Bogey of Albuminuria.

FRIDAY.—4 P.M., Mr. S. Stephenson: Clinique (Eye).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, road, W.

MONDAY.—12 noon: Lecture:—Dr. Low: Pathological. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eye. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Bidwell: Clinical.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 12 noon: Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Ball: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. R. Jones: The Relation of Insanity to Allied Neuroses.

WEDNESDAY.—10 A.M., Dr. Ball: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Scott: Diseases of the Eye. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women. 5 P.M., Lecture:—Dr. Beddard: Practical Medicine.

THURSDAY.—12 noon, Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eye. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Edwards: Clinical.

FRIDAY.—10 A.M., Dr. M. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Ball: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Mr. R. Lloyd: Anæsthetics.

SATURDAY.—10 A.M., Dr. Ball: Diseases of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Scott: Diseases of the Eye. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Cliniques:—10 A.M., Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Throat, Nose, and Ear (Mr. H. W. Carson); X Ray (Dr. A. H. Pirie). 4.30 P.M., Medical In-patient (Dr. A. J. Whiting).

TUESDAY.—Clinique:—10.30 A.M., Medical Out-patient (Dr. A. G. Auld). 2.30 P.M., Surgical Operations (Mr. Carson). Cliniques:—Surgical Out-patient (Mr. Edmunds); Gynæcological (Dr. A. E. Giles). 4.30 P.M., Demonstration:—Dr. G. P. Chappel: Selected Medical Cases

WEDNESDAY.—Cliniques:—2.30 P.M., Medical Out-patient (Dr. Whipham); Dermatological (Dr. G. N. Meachen); Ophthalmological (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations. (Dr. Giles). Cliniques:—Medical Out-patient (Dr. Whiting); Surgical Out-patient (Mr. Carson); X Ray (Dr. Pirie). 3 P.M., Medical In-patient (Dr. G. P. Chappel). 4.30 P.M., Lecture-Demonstration:—Dr. A. J. Whiting: Cases of Aneurysm of the Thoracic Aorta (at the Mount Vernon Hospital Out-patient Department, 7, Fitzroy-square, W.).

FRIDAY.—10 A.M., Clinique:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Surgical Operations (Mr. Edmunds). Cliniques:—Medical Out-patient (Dr. Auld); Eye (Mr. Brooks). 3 P.M., Medical In-patient (Dr. M. Leslie).

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2.15 P.M., Sir Dyce Duckworth: Medicine. 2.30 P.M., Operations. 3.15 P.M., Mr. W. Turner: Surgery. 4 P.M., Dr. StClair Thomson: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat. 4 P.M., Special Lecture:—Dr. StClair Thomson: Mouth Breathing.

TUESDAY.—2.15 P.M., Dr. R. T. Hewlett: Medicine. 2.30 P.M., Operations. 3.15 P.M., Mr. Carless: Surgery. 4 P.M., Mr. M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 3.15 P.M., Special Lecture:—Mr Carless: On Movable Kidney.

WEDNESDAY.—2.15 P.M., Dr. F. Taylor: Medicine. 2.30 P.M., Operations. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical, 11 A.M., Eye.

THURSDAY.—2.15 P.M., Dr. G. Rankin: Medicine. 2.30 P.M., Operations. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Mr. M. Davidson: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical 12 noon, Ear and Throat.

FRIDAY. 2.15 P.M., Dr. R. Bradford: Medicine. 2.30 P.M., Operations. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 2.15 P.M., Special Lecture:—Dr. R. Bradford: Diabetes.

SATURDAY.—2.30 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, N.

MONDAY.—9 A.M., Operations (Mr. White). 2.30 P.M., In-patients—Medical (Dr. Beevor); Out-patients—Medical (Dr. Willcox), Surgical (Mr. Low), Eye (Mr. Morton and Mr. Coats).

TUESDAY.—2.30 P.M., In-patients Medical (Dr. Beale), Throat and Ear (Mr. Waggett); Out-patients—Surgical (Mr. Edmunds), Throat and Ear (Mr. French); Operations (Mr. Beale).

WEDNESDAY.—2.30 P.M., In-patients—Surgical (Mr. Stabb); Out-patients—Medical (Dr. Horder), Gynæcological (Dr. Lockyer), Skin (Dr. Whitfield), Teeth (Mr. Baly); Operations (Mr. Stabb).

THURSDAY.—2.30 P.M., In-patients—Medical (Dr. Morison).

FRIDAY.—3.30 P.M., Lecture:—Dr. C. Lockyer: Cancer of the Womb.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Lecture:—Dr. A. Turner: Cranial Nerve Paralysis.

FRIDAY.—3.30 P.M., Lecture:—Dr. J. Taylor: Myopathies.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C.

THURSDAY.—6 P.M., Lecture:—Dr. M. Dockrell: Syphilis: History and Primary Invasion (Constitutional and Local). Eruptions, Erythematous (I., Macular; and II., Maculo-Papular).

CHARING CROSS HOSPITAL.

THURSDAY.—3 P.M., Demonstration:—Dr. Galloway and Dr. MacLeod: Diseases of the Skin. 4 P.M., Demonstration:—Dr. W. Hunter: Medical. (Post-Graduate Course).

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle street, Piccadilly, W.

FRIDAY.—9 P.M., Prof. E. Rutherford: Recent Researches on Radio-Activity.

ROYAL SANITARY INSTITUTE, Parkes Museum, Margaret-street, W.

WEDNESDAY.—8 P.M., Discussion on Rivers Pollution, with Special Reference to the Board proposed by the Royal Commission (opened by Sir William Ramsay, K.C.B.).

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1907, which was completed with the issue of Dec. 28th, were given in THE LANCET of Jan. 4th, 1908.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1907 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

Cases for binding the half year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

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WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will insure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

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TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and Agents are authorised to collect, and generally do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

During the week marked copies of the following newspapers have been received:—*Morning Advertiser, Manchester Evening Chronicle, Edinburgh Evening News, Morning Post, Daily Chronicle, The Tribune, Daily Graphic, Liverpool Courier, Manchester Courier, Daily Express, Birmingham Post, Daily News, Manchester Dispatch, Northern Whig, Bournemouth Echo, Westminster Gazette, Cork Examiner, Lymington Chronicle, Poole Herald, Coventry Times, &c.*

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